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AN INTRODUCTION TO

THE PHILOSOPHY OF

HERBERT SPENCER

BY

WILLIAM HENRY HUDSON,

Author of "Rousseau and Naturalism in Life and Thought," "Sir Walter Scott," etc.

Revised throughout, and in large part re-written

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PREFACE

IN the preface (dated Stanford University, California, April, 1894) to the first edition of this little book, I described it as "an outgrowth of lectures delivered from time to time on various aspects of the subject with which it deals," and explained that the writing of it had been undertaken "to meet what seems to me to be a very healthy popular demand." I went on to speak of the growth of public interest in the theory of Evolution in general, and in the writings of Herbert Spencer in particular, and of "the desire, often of late expressed to me by thoughtful and inquiring persons of broad outlook but limited leisure, to know more of Mr. Spencer and his work, of the relative and historic relations of his philosophy, and especially of its significance in connection with those questions with which we are all of us directly concerned—the questions of conduct, society, and religion."

I then described the purpose of my book in the paragraphs which I here reproduce:—

"But here arises a difficulty. Mr. Spencer's writings are and must be repel-

lent to many would-be readers on account of their vast range and encyclopedic character. The comparatively unpractised and totally unguided student, set face to face with a whole shelf full of ponderous volumes, covering with great minuteness of detail an immense area of speculation and research, and couched in a singularly condensed and not very attractive style, is apt to pause before committing himself to a long and perilous journey over untried country—a journey probably fraught with unforeseen dangers, and for which he may well feel himself imperfectly prepared. Did he but possess some outline-map, however scanty, of the region to be traversed; did he but know something, to begin with, of the principal natural features likely to be encountered on the way, the whole undertaking would appear to him in a far more favourable light. He would then at least realise to some extent the direction he was to take, and feel the better equipped to grapple with whatever adventures might await him in his long and arduous course.

"In the hope of furnishing some such

outline-map or hand-guide the following pages are written. My object is, therefore, a very unambitious one. I do not propose to trace over the arguments or summarise the conclusions of the Spencerian philosophy. Still less do I feel called upon to enter into any discussion of its more debatable aspects. Nor, beyond all things, is it my intention to offer a substitute for the *Synthetic System* itself. Those who would really understand Mr. Spencer's ideas must themselves go to his writings; no short cut can be pointed out that can be other than unsatisfactory; no patent method can be devised that will relieve the student of the need for a first-hand study of Mr. Spencer's own arguments, or even render such first-hand study a very light and easy task. But experience on the platform and in private conversations has shown me that something may be done to smooth the way for the untrained and unwary feet. The sympathetic inquirer may be put into direct contact with the vital germ, or essential principle, of Mr. Spencer's thought; he may be led to realise how that thought took shape; he may be introduced to its genetic history; he may be placed in the position to understand its relation to modern tendencies in science and philosophy, and to appreciate the direction of its influence upon the practical problems of the every-day world. Guidance may thus be furnished of a helpful character,

and the approach to the *Synthetic Philosophy* made much less thorny and toilsome than it would otherwise be.

"If the present introduction succeeds to any extent in this humble labour of usefulness—if it serves to bring others under the more immediate influence of a teacher to whom my own personal debt is so great—its existence will be amply justified."

I have good reason to believe that, in the ten years which have passed since its publication, its existence *has* been justified in the ways suggested; and it is in the hope of still further widening its field of usefulness that I have gladly consented to the present cheap edition.

I am anxious to have it understood, however, that this is not by any means a mere reprint of the original work. I have revised it carefully throughout; I have endeavoured in several places, by additions and changes, to make my exposition fuller and completer than it was; and I have brought the whole book up to date. The greatest alterations have been made in the first half. The biographical chapter has been entirely re-written; and in this I have dealt with Spencer's life and personality more freely than I felt it proper to do while he was still alive. Chapters II. and III. have also been much changed; a good deal of fresh matter has been introduced; and several sections have been written quite anew. I hope, and believe, that in

this way I have made the book at once more interesting and more helpful.

At the same time, it must be distinctly borne in mind that I have in no wise changed its place, or enlarged its scope, as set forth in the paragraphs quoted from the original preface. I was a very thorough-going Spencerian when the volume was first written. That was, as I have said, ten years ago; and my attitude, in various respects, is far less discipular now. Yet I think, considering the purpose I had in view in writing it, it would be undesirable to confuse

my work by blending criticism with exposition. My aim is still, therefore, to set forth and illustrate Spencer's thought, not to pass judgment upon it, though in places (as notably in the closing chapter) I have not hesitated to travel beyond Spencer himself, and to point out what seem to me to be some of the natural implications of his teaching. As an Introduction, in the most modest sense of the word, the book was first published. As an Introduction, in that same most modest sense, it must still be regarded.

WILLIAM HENRY HUDSON.

Hamstead, August, 1904.

An Introduction to the Philosophy of Herbert Spencer

CHAPTER I.

HERBERT SPENCER: A BIOGRAPHICAL SKETCH

"It has seemed to me that a natural history of myself would be a useful accompaniment to the books which it has been the chief occupation of my life to write." In this opening sentence of the preface to his *Autobiography*, Herbert Spencer explained and justified the publication of the two massive volumes in which, with admirable frankness and extraordinary wealth of detail, he traced his career, analysed his character, and set forth the dominating purposes of his work. As I pointed out at the time of the appearance of this remarkable piece of self-portraiture,¹ Spencer was entirely right in emphasising its practical utility for the student of his philosophy, who will, indeed, find it beyond question the best possible introduction to the Synthetic System itself. Here we shall merely be adopting his own view of the intimacy and significance of the connection between the man and his work if, on the threshold of our examination of his writings, we pause to take a brief survey of his life. From the purely personal standpoint, it is true, such a

record may very probably seem deficient in those more dramatic elements of interest for which we are accustomed to look in the history of any man who has left a profound impress upon the civilisation of his age. Spencer's biography is, in fact, essentially the biography of the thinker; it is little more than the story of his preparation for his great life-work, of the growth and consolidation of his ideas, of the inception of his philosophic system, and of the gradual progress of this, through difficulties all but insuperable, stage by stage, to its long-delayed completion. But, apart from the fact that it may serve to some extent to satisfy a natural curiosity concerning the life and character of a man whose writings have marked an epoch in the development of the world's thought, our sketch should prove of special value in one important respect. By relating the *Synthetic Philosophy* directly to the career and personality of its author, it should enable us to appreciate a feature of it which otherwise we should be very likely to overlook—the grandeur of that colossal achievement upon the moral side.

¹ *Independent Review*, July, 1904.

I.

Born in Derby, on April 27th, 1820, and the only child of his parents to survive infancy, Herbert Spencer came of a stock long marked by intellectual integrity, fearlessness, and independence; what he himself calls his "ingrained non-conformity" of nature being, as ancestral records show, a well-defined and persistent family trait, which, clearly exhibited in several lines of progenitors, was extremely pronounced among the Spencers in the generation immediately preceding his own. His father, William George Spencer, was a man of strong individuality, great inventive powers, and an unconventionality of habit so decided that "he would never take off his hat to anyone, no matter of what rank," or "address anyone as *Esquire* or *Reverend*." He was by profession a teacher, holding views, however, of the aims and methods of education greatly in advance of the average scholastic theories of his time. In opposition to the then common practice of burdening the childish memory with large numbers of unconnected facts, he maintained that the first business of education was rather to train the faculties of observation and reason in such manner that the unfolding mind should learn not only to acquire, but also to organise, knowledge for itself. Hence he regarded it as of more importance to foster originality and the free play of thought, to excite interest, and to strengthen the reflective powers, than to store the memories of his pupils with any quantity of merely bookish erudition. These points are particularly worthy of attention, since it was under the immediate influence of the elder Spencer that

the boy's mind began to develop. Unlike most men of genius, the Philosopher of Evolution appears to have owed little or nothing, either through inheritance or by training, to his mother; while in countless ways, in both intellect and character, he showed himself his father's son. There can, I think, be no question that his own early environment, and the power of his father's teaching and example, had not a little to do with the formulation of some of his own well-known views on education.

It has been frequently said that it was owing very largely to the child's precarious health that he was permitted to grow into boyhood without subjection to the mental coercion and cramming then so much in vogue. The truth of the matter is that he was not specially delicate in early years, and that his father's course of procedure was dictated wholly by fear of the physical and mental consequences which might result from application of the forcing system, to which he was totally opposed. So little pressure was, indeed, brought to bear upon him that, measured by the standard of mere acquisition, he was a very backward child. He was seven years old before he could read; and after that he does not seem to have exhibited much of that inherent fondness for books which is a common characteristic of the alert and thoughtful boy. It is not unamusing to find that the first volume which prompted him to read of his own accord was good, moral, prosy old *Sandford and Merton*—a work which, I suspect, has now quite outgrown its popularity, but which for a long time contrived, in some most unaccountable way, to hold the affections of large portions of the English-speaking youth; and that when, somewhat later, he began to seek gratification for his

¹ *Autobiography*, i., 47.

awakening taste for fiction—by stealth, for his father did not approve of novels—*The Castle of Otranto* and the romances of Mrs. Radcliffe were among the books which he ^{very} secretly, after being sent to bed, ^{already} already, as always, his chief interest lay ^{in the} in the world of nature rather than in that of ^{bu}ture. To watch the growth of a plant ^{to} the habits of an insect gave him ^a great pleasure, even then, than could be yielded by any printed page. “Most children,” he remarks, “are instinctively naturalists,” though their enthusiasm too often wanes from lack of opportunity or encouragement. The elder Spencer, wiser than most parents in such matters, was careful to [“] cultivate his son’s early-shown love of natural history.

Though between the ages of seven and thirteen Herbert was sent pretty regularly to day-school (where, it is suggestive to learn, his insubordination of temper led to “chronic disobedience”), his real education was undoubtedly that which he received from his father at home. There, apart from direct instruction given—which, while in many respects exceedingly narrow, was, on the whole, of a kind calculated to feed and strengthen such a mind—the general conditions were distinctly favourable to mental and moral growth. Into the house came regularly, week by week and month by month, the more advanced of the medical, scientific, and literary periodicals, and into these the boy was permitted to delve at his will. More important than his varied and somewhat capricious reading, however, were the table conversations to which he early became an attentive listener, and in which he was presently allowed to bear his part. George Spencer

and his brothers—all men of powerful intellects and pronounced views, and all Radicals in politics and broad-minded in their theology—were accustomed, during their family gatherings, to discuss, with absolute freedom of thought and expression, all the paramount issues of the day, scientific and social, ethical and religious; and young Spencer was thus habituated from his earliest boyhood to the treatment as open questions of the grave matters which were then uppermost in the minds of thoughtful people. At a time when most children are being taught, beyond all things else, the value of authority and the sanctity of tradition, he was already inured to the freest and keenest atmosphere of discussion, and to the bold and direct criticism, in face of the settled opinions of the majority, of even the most time-honoured beliefs. This inevitably strengthened his natural self-reliance, still further quickened his critical powers, stimulated his tendency towards independent inquiry into things, and increased his hatred of having opinions imposed upon him ready-made and from the outside.

During this period his religious experiences were curious enough to call for passing remark. Both his father and his mother had been brought up Methodists; but while the latter remained an adherent of her old faith, the former, urged by a constantly growing dislike of much in the Methodist system and teaching, had forsaken that body to become a regular attendant at the Friends’ Meeting House, drawn to the Society, not by any sympathy with its tenets, but by its individualism and complete freedom from ecclesiastical government. As he did not care to assume such control of the child’s spiritual interests as would ignore the

* *Autobiography*, i., 71.

mother's claim, a compromise was tacitly agreed to, and for some three years, Sunday after Sunday, Herbert went in the morning to the Meeting and in the evening to the Methodist Chapel. "I do not know that any marked effect on me followed," Spencer writes in comment, "further, perhaps, than that the alternation tended to enlarge my views by presenting me with differences of opinion and usage."¹ We may surmise, however, that the indirect tendency of such an experience would be towards the undermining of the authority of theological dogma in every form.

It would be interesting, did space permit, to pause here to consider the striking contrast presented by the early trainings of the two most acute and original thinkers in the domain of philosophy produced by England during the past century—the subject of this sketch and John Stuart Mill. Mill, it will be remembered, was also educated under his father's immediate supervision; was also surrounded in childhood by men of strong character and independent thought; and early learned to disregard tradition and to turn the lens of criticism upon the world's most cherished creeds. But here the analogy practically ends; Mill's mind was forced as in a hothouse; Spencer's was allowed to develop in the open air, and with the least possible pressure from without. Mill, precocious in all the learning of the schools, read Latin and Greek at an age when Spencer could scarcely spell out his own language. Mill was brought up to regard the whole vast system of popular theology as a mere congeries of idle and ridiculous fables; while Spencer grew up in personal relationship with Evan-

gelical Christianity in two of its most diverse forms. And, finally, Mill was taught to look upon all the problems of social and political science in a doctrinaire spirit, and as susceptible of rapid and entire resettlement; while Spencer was rather encouraged to consider the very possible question on a philosophical subject as an open one, and approached from many points of view, and investigated under many different lights. The contrast thus presented might be elaborated in detail, with results which, to those interested in pedagogy, could hardly fail to be instructive; but it would lead us too far out of our proper way to do more than touch upon it here. One special difference may, however, be accentuated. Mill's early training, unlike Spencer's, was almost exclusively in books. The regret which he expressed in his *Autobiography*, that he had never known the discipline of any practical scientific work, has certainly deep significance, coming from such a source.

II.

At the age of thirteen, a complete change in the course of his education seeming desirable, Herbert was sent from home and placed under the charge of his uncle, the Rev. Thomas Spencer, at that time perpetual curate of Hinton Charterhouse, near Bath. Thomas, like the rest of the Spencer family, was a man of strongly-marked individuality, and, though an adherent of the Evangelical school, was so strange a specimen of his class that he was commonly regarded as hopelessly eccentric, if not indeed a trifle mad. A Radical at a period when nearly the whole Established Church was in bondage to the High Tory party; a teetotaler when the temperance

¹ *Autobiography*, i., 83, 84.

movement was condemned by the religious world at large as a subtle form of Atheism; a Chartist, an avowed Free Trader, and (with a single exception) "the only clergyman out of fifteen thousand who contended that the people of England, mostly poor, should not be compelled to buy corn at artificially enhanced prices to enrich English landlords";¹ a vigorous and indefatigable lecturer and writer upon all matters touching the physical, moral, and social welfare of the people; he was certainly a man marked out with sufficient clearness from the rank and file of the ecclesiastics of his day. My own father, who knew him well in the forties, often in my hearing bore testimony to his great earnestness and devotion—qualities which, indeed, led him into such excesses of labour for the causes he had at heart that, never of robust constitution, he broke down ultimately from overwork, and died at the comparatively early age of fifty-seven.

At Hinton, Herbert now spent three quiet, but, from the point of view of intellectual and moral development, by no means uneventful, years; for the course of study pursued was more regular and systematic, and the discipline more rigorous, than had been the case at home. His successes and his failures in the subjects taken up continued to be alike significant. To get a lesson by heart was still almost intolerable, and he rarely recited anything correctly which had been learned by rote; but, on the other hand, he soon exhibited astonishing quickness and grasp in all matters demanding observation, thought, and reasoning power. In Greek, Latin, and French, to which a portion of his

time was daily given, very little progress was made; a chief cause of his dislike of languages being his "aversion to everything purely dogmatic."² But where the constructive and co-ordinating faculties were called into play—as in mathematics and mechanics—his advance was rapid and continuous. An incident which he himself has placed on record, and which occurred when he was between thirteen and fourteen, well illustrates the salient qualities of his mind and character—his penetration, fearless self-confidence, and disregard of all commonly-accepted authority, whether of book or teacher. While reading Arnott's *Physics* with his uncle, he boldly challenged the doctrine of inertia, as there expounded; and when his uncle came to Arnott's rescue, the objection was firmly adhered to in the teeth of an official opposition which would have reduced most boys to silence. With a mind so clear, alert, and independent, it is not surprising that he should have taken a keen delight in breaking away from the travelled roads to strike out new mathematical problems for himself, and elaborate original solutions for old ones.

The design for a time entertained by Thomas Spencer, himself an academic honours man, and to a certain extent an advocate of classical culture, of sending Herbert to Cambridge was gradually relinquished, as the uncle came to realise the lad's unfitness for a university career; and Spencer thus adds another to the long list of English leaders of thought who owe nothing directly to either of our ancient institutions of learning. That by foregoing a university

¹ *Autobiography*, i., 30.

² *Autobiography*, i., 108, 109.

curriculum he sacrificed something, more especially perhaps upon the social side, will be generally conceded; but it may, I think, fairly be urged that what he lost was, on the whole, trifling and unimportant in comparison with what he gained. The Cambridge of sixty years ago was an antique, aristocratic, exclusive, and highly conservative seat of humanistic learning; saturated by the intellectual traditions of the renaissance; dominated by ancient methods and ideals; and wholly out of touch with the conditions and requirements of the modern world. A few years spent in such a place in enforced attention to certain prescribed studies which, as then and there pursued, would have been totally deficient in seminal power, and to which, for his part, he would have brought no fertilising enthusiasm, could have contributed nothing to the growth of his mind or character; and while the influence of an environment steeped in the dogmatism of obsolete schools of thought could hardly have turned him aside permanently from his natural course of development, it would almost certainly have made more difficult his line of approach to the great work to which his life was to be devoted. That Spencer suffered, and in some directions very seriously, from want of what is specifically called "culture," I should be one of the first to admit; and Mr. Macpherson is doubtless right in suggesting that, in a practical way, his road would have been smoothed for him by academic standing and connections, since he would not then have been obliged to live down "the insidious opposition of university cliques, who could not bear to see a new thinker of commanding power step forward into the intellectual arena without the hall-

mark of university culture."¹ Yet, considering all the conditions, and realising how disastrous it would have been had he, on entering manhood, been hampered, to how slight an extent soever, by hereditary leading-strings, the rigid or pedantic, we can hardly be thankful that Spencer remained a free lance. This much must at least be added. Not only did Spencer himself never see any reason to regret the course pursued, but even his uncle, the strongest advocate of the benefits of a Cambridge training, lived to acknowledge that that course was probably the wise one.²

III.

Be this as it may, however, to Cambridge he did not go, but on leaving Hinton returned instead to his father's house, where he spent what was to all appearances an idle and profitless year. Yet, while little in the way of regular study was accomplished, the mind was by no means lying fallow, for the old pastime of independent research in the field of mathematics and mechanics was resumed; one result of which was the striking out of a curious original theorem in descriptive geometry, afterwards published, along with his own demonstration,

¹ *Herbert Spencer: The Man and his Work*, p. 13.

² Spencer's pronounced opposition to the ordinary classical curriculum is one of the most widely-known characteristics of his general teaching. Systematically expressed in his *Education*, it will be found cropping up in unexpected forms and places in almost all his other writings. It should be noted that it is largely based upon his belief that the common scholastic routine, with its superstitious veneration of the past, and entire devotion to merely bookish learning, inevitably leads to intellectual subjection; and that it is, therefore, one aspect of his general revolt against the tyranny of authority.

in the *Civil Engineer and Architect's Journal*. Then came his first experiment in practical work, as assistant in a school in which he had spent some little time as a boy. Mr. Spencer senior had a very high idea of the duties, responsibilities, and inherent dignity of his calling; at a time when there was still ⁱⁿ ~~on~~ in the popular saying that a man who had failed in everything else could buy a birch and turn schoolmaster, he realised to the full the teacher's vast importance in moulding the destinies of the coming generation; and, in face of a public opinion which persisted in treating the educator as belonging as naturally to the lower grades as the warrior to the upper grades of society, he felt strongly (as Carlyle afterwards phrased it) that there is a deeper and truer glory in training men's minds than in blowing their bodies to pieces with gunpowder. Holding these views, he would naturally have been well satisfied to see his son adopt his own profession; and the measure of success which attended this early and brief trial was sufficient to prove that Herbert possessed the required qualifications. With a rare faculty for luminous exposition, he combined the power—the importance of which every practical teacher will recognise—of stimulating interest in the subjects dealt with; while his moral qualities showed to no less advantage. As a boy it had been remarked of him that, though he strongly resented any act of tyranny on the part of a master, and rose impatiently against anything in the shape of bullying from his older school-mates, he was always a favourite with the younger children, because his behaviour towards them was marked by the same respect as he himself demanded from those above him. In his new position he was quick to

recognise and careful to make the fullest allowance for the individualities of his pupils; and thus went far to realise that fine ideal of the relations between teacher and taught which he afterwards so strenuously insisted upon in the book on education.

But, all this notwithstanding, the experiment came to nothing—not apparently from any particular objection on young Spencer's part to the career of a teacher, but simply because his attention was unexpectedly taken off in another direction. In the autumn of 1837 an offer came from the resident engineer of the London division of the London and Birmingham Railway then in process of construction, which was at once accepted; the bias of his interests and the line of his studies alike pointing to the profession of civil engineering as one in which he would have good chances of success. He now passed nearly a year in the ordinary routine of engineering work—partly in carrying on surveys, partly in making drawings; and at the end of that time transferred himself to the Birmingham and Gloucester Railway, where a further period of eighteen months was spent in a fairly satisfactory way. During the latter engagement his progress in practical engineering was indicated by various papers on technical subjects in the *Civil Engineer and Architect's Journal*; while the invention of a little instrument, which he called the velocimeter, for calculating the speed of locomotive engines, bore testimony to the continued activity of his mind, more especially, as usual, in the direction of original work.

It now seemed, indeed, as if his course in life had at length been marked out for him. From that time onward, for the space of some ten years, he continued

to be intermittently engaged in engineering pursuits—periods of considerable activity alternating, however, with lengthy intervals, during which professional work remained at an almost entire standstill. But by-and-by, after several premonitory recessions in the tide of commercial prosperity, the railway mania ebbed away, leaving Spencer, along with countless other young men, stranded high and dry upon the shore. The crisis was a serious one; for those—and their name was legion—who had been attracted to the work during the season of temporary excitement now found themselves committed to a profession which offered but little outlook as a career, and was seriously overstocked. Thus, at the age of twenty-eight, Spencer found himself but little advanced towards a practical settlement in life, for, from any merely worldly point of view, the labours of the past few years had been almost thrown away. In no very hopeful frame of mind, therefore, as may well be imagined, he had now once more to beat a retreat to his family home in Derby, there to cast about him with a view to deciding upon his next step.

Regarded in the light of the man's later work, however, these years had not been altogether fruitless. In his not infrequent intervals of leisure, he had done a good deal of miscellaneous reading, and not a little thinking, and the result was that the expansion of his mind, which was presently to be so rapid, had already well begun. Science of all kinds continued to occupy the largest share of his attention; one book, in particular, deserving to be singled out for the marked, though indirect, influence which it exerted upon his thought. This was Sir Charles Lyell's then recently published *Principles of*

Geology. It was in this volume, which he read with deep interest at the age of twenty, that—though the idea was not altogether new to him—he first found a clear statement of that general doctrine of the “progressive development of organic structure,” which in these pre-Darwinian days went somewhat vaguely by the name of the “Development Hypothesis.” It is a matter of common knowledge that, with a courage and candour rare even among scientific men, Lyell in after years yielded to the arguments of the evolutionists, and, as he himself phrased it, “read his recantation.” But in the original form of the work, then in Spencer's hands, the writer made common cause with the uniformitarians against the theory of “innate progressive development” expounded by Lamarck and his disciples; and thus it happened that Spencer's first real acquaintance with the conception of Evolution was made in a volume in which it was examined in detail, and thrown aside as valueless. Spencer, none the less, was more struck by the doctrine than by the arguments directed against it, and—by no means the first convert who has been made by the attacks of the enemy—accepted the Lamarckian view so far as to believe in the evolution of species, while rejecting all the great Frenchman's accompanying theories save that of the adaptation of organisms to their environment by the transmission of acquired characters. From that time on he has to be reckoned an ardent supporter of the general idea of organic development. There can be no doubt that the ready acceptance on his part of a theory which was then held to be so radical and

¹ Prof. Sedgwick's *Anniversary Address to the Geological Society*; 1831.

startling, and which, as we now see clearly enough, rested in those days upon foundations altogether too uncertain to satisfy the rigidly scientific inquirer, was mainly due to the singularly well-prepared condition of his own mind. His own statement, indeed, puts the matter beyond question—the theory, he says, was in harmony “with that general idea of the order of nature towards which I had, throughout life, been growing. Supernaturalism, in whatever form, had never commended itself. From boyhood there was in me a need to see, in a more or less distinct way, how phenomena, no matter of what kind, are to be naturally explained. Hence, when my attention was drawn to the question whether organic forms have been specially created, or whether they have arisen by progressive modifications, physically caused and inherited, I adopted the last supposition, inadequate as was the evidence, and great as were the difficulties in the way. Its congruity with the course of procedure throughout things at large gave it an irresistible attraction; and my belief in it never afterwards wavered, much as I was in after years ridiculed for entertaining it. The incident,” Spencer adds, with his characteristic fondness for interpreting individual case in the light of comprehensive principle, “illustrates the general truth that the acceptance of this or that particular belief is in part a question of the type of mind.”

By reference to the same consideration we may doubtless explain the further fact that, with the maturing and consolidation of his thought about this time, there went the gradual dropping of the current creed. The whole case on this head has probably been summed up when we say that the miraculous element upon which that creed then laid the

principal stress was fatally out of keeping with the entire character of his mind. There are many men (and, owing to what Mr. Lecky called the “declining sense of the miraculous,” their number is daily growing greater) to whom the so-called supernatural basis of all popular theologies is just as immediately repugnant as it was immediately attractive to even the most acute and thoughtful minds during the ages of faith. Where they naturally and instinctively sought a metaphysical interpretation for all phenomena, we just as naturally and instinctively recoil from such an interpretation. By the operation, generation after generation, of a thousand subtle influences the whole atmosphere of life has been altered; the measures of judgment and the standards of probability have alike been changed; and the result is that the supernaturalism which held sway in the past is rapidly dying, not under stress of argument, but simply from inanition; not because it has been disproved, but because the thoughts of men have passed on whither it cannot follow. Without, therefore, attempting to settle the whole question of miracles on purely *à priori* grounds—than which no course could well be more unsatisfactory—many a man born and nurtured in the secular and sceptical environment of the present day necessarily finds that question resolve itself into one of relative antecedent probability, as between two possible explanations—a temporary aberration from that which verified experience has revealed to us as the undeviating course of nature, and an error in human testimony or interpretation; and since, first, we do not personally know anything of that disturbance in the normal order of things which is called miracle, and, secondly, the constant tendency of all

historic and scientific interpretation is to bring every such supposed disturbance into the category of law; while, on the other hand, every passing day yields abundant examples of the untrustworthy character of even the best-intentioned and most carefully-styled evidence; it is clear that the balance of probability must in every case be as infinity to one against the alleged miracle.

I am not, let me insist, undertaking to support the popular thesis that a miracle—by which we may mean with Locke an occurrence “contrary to the established course of nature,” or, more correctly, one not to be accounted for by our limited knowledge of that course—could not conceivably happen, and therefore never has happened. As Professor Huxley once pointed out, such a proposition, however attractive it might have looked in the days of Hume, would not now commend itself to any mind trained in scientific methods of investigation. What I do maintain is that, in any circumstances, the occurrence of a miracle, and still more, therefore, of a long series of miracles, must be held as antecedently so improbable that the fullest, clearest, and most unmistakeably detailed evidence must be required in its favour to counterbalance the enormous presumption against it furnished by the generalised experiences of mankind. The question, therefore, assumes the form as to whether, from the very nature of the case, such evidence is or can be forthcoming in regard to any miracle alleged to have been performed under such conditions as those existing, for instance, in the early days of Christianity. Here the principle of relative probability must be allowed its fullest weight; and the greater the antecedent improbability, the stronger must be the argument

advanced to overthrow it. A body of evidence which might suffice to convince us that a sick man made a most astonishing recovery from an illness need not, therefore, be held to justify a belief that a dead man was raised from the grave.

But to return to the attitude which Spencer, about this time it would seem, took up towards the orthodox creed. That attitude was simply the result of a gradual development of thought, the religious ideas in which he had been bred slowly and almost insensibly losing their hold upon him. He never passed the current theology under systematic examination; never undertook any regular inquiry into the evidence for and against it; never formally rejected it. To his nature, emotional and intellectual, it had been alien from the very first.¹ It had never become absorbed into his thought, because there was nothing in his mental constitution with which it could cohere, no place in which it would fit without upsetting and destroying the whole system of his belief. Thus, with the consolidation of such belief, it was merely dropped.

But Spencer, during this period of practical failure and rapid mental expansion, had done more than by study and thought to lay up a store of material for future use. He had delivered himself of his first message to the world. At twenty we find him writing, with all a youth's engaging self-confidence, of his desire “to make public some of my ideas upon the state of the world and religion, together with a few remarks on education.” Two years later—in the summer of 1842—he began the publication, in a paper called the *Nonconformist*,

of a series of letters on "The Proper Sphere of Government." These were subsequently revised, and made their appearance in pamphlet form in the course of the following year. Merely noting that, in this first discussion of a question on which he was to have so much to say by-and-bye, Spencer already insists on "the limitation of State action to the maintenance of equitable relations among citizens," we will postpone to another chapter any discussion of the relations of this little work to the order of the writer's thought. Here our concern is only with its place in his life; and in this respect it has its importance. Teaching had been abandoned for civil engineering, and this in its turn had abandoned him; and the outlook, in consequence, seemed gloomy enough. But one thing his little adventure into the world of literature had done for him—it had suggested the possibility, now that other careers had failed and the question of what to do next had become an urgent one, of turning his pen to account. Some five years after the publication of the "Letters," he paid a visit to London, partly on business connected with financial losses sustained by his uncle Thomas, but chiefly with the view of looking about for something to do; and out of this ultimately came the opportunity of a fresh start in life. At the end of 1848 he was appointed sub-editor of the *Economist*, and immediately established himself in the metropolis. The position, which he held till 1853, was by no means an ideal one for him; but it possessed two considerable advantages. It yielded a regular income, which, though small, was sufficient to meet his modest bachelor needs; and it allowed him a rather unusual margin of leisure for private study and work.

IV.

It was during such leisure hours, in the course of the next two years, that Spencer wrote his first important work, *Social Statics: The Conditions Essential to Human Happiness Specified, and the First of them Developed*. Published in 1850, when he was just thirty, this volume contained an extremely fresh and original treatment of social problems upon the fundamental principle that "Every man is free to do whatsoever he wills, provided he does not infringe the equal freedom of any other man"; was startling enough in many of the inferences drawn from this principle; and, as will be gleaned, pronouncedly individualistic in its whole tone and tendency; but, as is sufficiently well known, Spencer afterwards grew dissatisfied both with its metaphysical implications, and with some of its conclusions, and at one time made an effort to withdraw it from circulation. At the period of publication, however, it aroused some little interest, and, while of course never appealing to a very wide circle of readers, was on the whole well received by the critics—more favourably, indeed, than any of his later books; a fact which he notes as illustrative of the worthlessness of ordinary criticism.¹ That which it did for him personally was to bring him rather prominently into public notice, and to introduce him, as a rising author, to the literary and scientific world of the time. It was then that he formed his intimate friendship with the Brays and the Hennells, of Coventry; with the versatile George Henry Lewes, currently known as the ugliest man and the best talker in London; and with that wonderful

woman who was then sub-editing the *Westminster Review*, and had obtained a certain standing as "the translatress of Strauss," but who was a few years later to take England by storm with the *Scenes of Clerical Life* and *Adam Bede*. When, in September, 1851, George Eliot wrote to Mr. Bray that she had recently met "a Mr. Herbert Spencer, who has just brought out a large work on *Social Statics*, which Lewes pronounces the best he has ever seen on the subject," she described the beginning of an association, full of mutual reverence and esteem, which was to last till death ended it by the removal of the great novelist herself. More than this, however: *Social Statics* gave Spencer himself a practical and unmistakable revelation of his own powers, and pointed out to him more clearly than anything had done before the lines which his subsequent reading and thinking might most profitably pursue. It is surprising, therefore, to learn that, notwithstanding the success he had won, his misgivings concerning the future continued to be so great that he still more or less seriously entertained the idea of emigrating to New Zealand. His method of dealing with this project was highly characteristic. "Averse to unmethodic ways of judging," he drew up "a rough numerical valuation of the several ends in life which might be respectively better achieved, these by staying at home, and those by emigrating"; and then, "adding up the numbers on each side," arrived at totals which he regarded as yielding "more trustworthy ideas of the relative advantages than mere unaided contemplation." The result came out in a way to set all doubts at rest—advantages on the side of England, 110; on the side of New

Zealand, 301!¹ We all know what happens when we undertake to decide upon a course of action by tossing a penny; and Spencer, fortunately for the world, disregarded his unimpeachable calculation and stayed at home.

The most practical result of *Social Statics* was the connection which through it he now formed with the *Westminster Review*, a magazine of many years' standing, then recently purchased and established on a new basis for the promulgation of advanced views of social, scientific, and religious questions, by an enterprising publisher named John Chapman. It was in the pages of this review that he began the publication of those elaborate essays which, though now mainly interesting as auxiliary to his great work, and as marking out the lines of his approach to and preparation for it, were enough at the time to call attention to the rise of a new force in the philosophic world. Here, as we have to deal with these essays from the outside only—as events in the man's life—it will be sufficient if we say of them that their success enabled him after a while to drift out of the semi-journalistic and routine work in which he had been engaged on the *Economist*, and to devote his whole time and energy to what was now beginning slowly to assume the character of a chosen undertaking.

For some seven years after this, with an interval of eighteen months of enforced idleness—of which more anon—he continued to be pretty regularly engaged with magazine work of this kind, and, in addition, produced, in 1855, a bulky volume on psychology, afterwards incorporated into his more extended treatise on the same subject in the *Synthetic*

¹ *Autobiography*, i., 370.

System. In this work the problems of mind were throughout approached and discussed from the evolutionary point of view, which was, indeed, the point of view from which, as the essays show us, every question, of whatever class, was now regarded. All this kept him busy till 1860. But in the meantime a change, destined to be fraught with results of a permanently disastrous character, had come into his life. Overwork upon the *Psychology* had brought on a nervous breakdown so serious that, for fully a year and a half, he was forced to lay aside the pen and suspend his labours altogether. Partial restoration followed this prolonged rest; but it was partial restoration only. From that time onward to the end he was a martyr to dyspepsia and insomnia, and to the hypochondria which was the distressing, though quite natural, result of a shattered nervous system.

The year 1860, to the verge of which we have now followed him, marks the great crisis in Spencer's life; and, beyond this, is for ever memorable in the history of modern thought, for it was this year which witnessed the publication of the prospectus of his philosophic system. In the light of this new and enormous enterprise, on the threshold of which he now stood, all his previous output, remarkable as in itself that had been, dwindles to the proportions of mere experiment and preparation. The time had now come for achievement. A full outline-plan of the proposed work was given to the public, and Spencer laid his hand to a task which he knew would mean the production of ten stout volumes, close-packed with thought, and of no very saleable character, and which he calculated would occupy twenty years of regular and unremitting toil.

Let us turn for a moment to his circumstances and general outlook at the time, that we may be in a position the more fully to appreciate all that was implied by self-committal to such an undertaking. Marvellous in itself, that undertaking grows still more marvellous when we come to realise the conditions of its inception and execution. In the first place, Spencer's financial prospects were not in any way satisfactory. Possessed at the outset of but small personal resources, he had frittered away the greater part of these in devotion to studies which had brought him but little practical recompense. He had, indeed, derived something of an income from his pen; but his articles had demanded too much thought and labour to make their production remunerative. A small sum of money which had been left him by his uncle, the clergyman, now dead, had been wholly or largely swallowed up by the publication of two volumes which had so little to commend them in the popular market that their value as an investment had been worse than nothing at all; while a further drain of no inconsiderable kind had been made upon his purse by eighteen months of idleness, and all the added expenses consequent upon deranged health. Beyond, and worse than all this, there was the fact that his breakdown had left him in so impaired a condition that three hours a day was all that he could safely rely upon for the carrying forward of his work. Finally, as a commercial enterprise, the proposed undertaking offered nothing of an encouraging character. Few enough could, in the very nature of things, be induced to lend it their support, for the public to which appeal was to be made was necessarily very limited; while, among those who looked on with

partial interest or half-aroused sympathy, there were many who deprecated the self-imposed task as too vast, comprehensive, and ambitious for adequate accomplishment within the limits of a single life, and as even foolhardy in the uncertain state of his health. Such obstacles might well have proved enough to deter the most courageous and indomitable of men, and one cannot be astonished that, when at length the concluding division of his vast scheme was reached, Spencer himself, looking back over his six-and-thirty years of toil, should have been surprised at his "audacity in undertaking it, and still more surprised by its completion."¹ Whatever may be said about the *Synthetic Philosophy* as a coherent body of doctrine, however much we may individually disagree with its central principles and their application in his hands to the solution of the fundamental problems of life, there is thus a personal grandeur about the gigantic work upon which it is a pleasure and an inspiration to dwell. As a monument of quiet courage and perseverance, of self-sacrifice and entire consecration to the pursuit of a great ideal, it stands almost without rival in the history of the world's grandest achievements. Spencer's place is for all time among those heroes of moral effort, struggle, and conquest whose memory more and more, it is to be hoped, men will delight to honour.

V.

From this time on the history of the man is, for the outside world, practically merged in the history of his work; the dates of importance are those of the publication of the various instalments of

the projected series; all else in his life assumes something of an episodic character. He had estimated, as I have said, that, allowing two years for each volume, the completion of his system would take twenty years. Reckoning from the issue of the first part of *First Principles*, in October, 1860, to that of the last division of the *Sociology* in the autumn of 1896, it actually occupied just thirty-six years. Difficulties of many kinds he had anticipated at the outset; but the event proved that he had not made sufficient allowance for them. For a time the practical support yielded to him by the reading public was so small that he came within measurable distance of abandoning his labours altogether; a course he would almost certainly have taken had not the sudden death of his father added something unexpectedly to his means. After this interruptions occurred with increasing frequency in various unlooked-for ways. He was forced to pause in the methodical unfolding of his plan to explain, re-state, clear up misconceptions, and unfortunately

¹ It is a pleasure to recall the service rendered and the sympathy shown at this period of discouragement by friends and well-wishers. On the other side of the Atlantic, Professor Youmans, one of his most devoted adherents, succeeded in raising among Spencer's admirers a sum of \$7,000, which was invested in his name in American securities; and brought to England, together with the certificates of the shares, a gold watch, which he presented to him as a tribute of their gratitude and admiration. The money Spencer accepted as a public trust to be applied to the purposes of the *Descriptive Sociology*; the watch he valued to the end as one of his most cherished possessions. At home, John Stuart Mill, with rare public spirit and generosity, offered to assume the financial responsibility of the undertaking by guaranteeing the publishers against loss—a proposal which Spencer could not indeed entertain, but which touched him deeply (*Autobiography*, ii., 133-136).

¹ Preface to *The Principles of Sociology*, vol. iii.

(for in this always distracting and generally unprofitable way he consumed much valuable time) to reply to adverse criticisms. His energies were drawn off into other, though in most cases directly subsidiary, lines of work. The supervision of the compilation of the *Descriptive Sociology*, itself an immense task; the writing for the "International Scientific Series" of his book on *The Study of Sociology*; the publication of a number of timely essays (such as those composing *The Man versus the State*), rendered necessary, as he felt very strongly, by the political conditions and tendencies of the hour; all these things—valuable as in themselves they were—delayed the prosecution of the larger design. And, worse than all, his physical powers, as years went on, continued steadily to decline. His calculation of a working-day of three hours, moderate as to most men this would have seemed, presently turned out to be altogether extravagant. Only by the most careful husbanding of his energies was sustained labour possible to him at all. During the later years of his work absolute inaction was often forced upon him as the sole means of recuperating his over-taxed strength; while through many a prolonged period of sleeplessness and utter prostration the dictation of a paragraph or two each morning represented the extreme reach of his productive capacity. That in such circumstances the *Synthetic Philosophy*—with its grand total of 6,000 closely-printed pages—should ever have been pushed to completion must be regarded as a fact not easily paralleled in the history of philosophy or letters.

During these years his outer life was quiet and uneventful. Never married, and, after the death of his mother in 1867, without near relatives, he lived till

1886 in boarding-houses in London, thus, under medical advice, escaping the evils of a solitary domestic existence. His home for nearly a quarter of a century was at 37 and 38, Queen's Gardens, Lancaster Gate, where I myself first knew him; though at the same time he had, at 2, Leinster Place, near by, an independent room, which he used as a library and study. It was there that, during the first year of my secretarial association with him, most of his work was done; his habit being to walk over about half-past nine, dictate as long as he felt able—in order to economise his strength, he had made it a practice to dictate everything, even his letters—and then leave for the day. At that period he spent several hours of the afternoon and evening pretty regularly at the Athenæum Club, returning to Queen's Gardens, however, in time to listen to some music, of which he was always extremely fond, and in which he found his principal solace as increasing ill-health made other distractions impossible. Into general society he never went much, and less and less as years passed on; his abstention being prompted, not by any natural fondness for seclusion, but by the nervous evils—often real, sometimes imaginary—which social excitement entailed, and the consequent interruption of his work. Of external events, during this long period, the most important was his visit to the United States in 1882.¹

In the summer of 1886 he went for a long visit to Brighton (always a favourite place of resort with him), and, after various experiments (including a home of his own in London), finally took a house there on the East Cliff, facing the

¹ See *The Americans* (Essays, vol. iii.).

sea, "with the intention," as he wrote me at the time, "of living here for the rest of my life." This intention was fulfilled. Little by little he lapsed into complete invalidism, and, with the completion of the work for which he had practically lived, ceased to have much desire for the continuance of an existence the great purpose of which was accomplished, and which now was year by year becoming an increasing burden. Yet the end, to which he had long calmly looked forward, came very slowly; for, despite his half a century of nervous trouble, his constitution was still marked by wonderful resisting power. When it did come it was very peaceful. During the afternoon of December 7th, 1903, he fell gradually into unconsciousness, and so passed quietly away in the early morning of the following day.

In accordance with his directions, his remains were cremated at Golder's Hill Crematorium, where Mr. Leonard Courtney delivered a brief but impressive address. As my friend, Mr. Hector Macpherson, and I walked away together afterwards, with the last words of the orator's tender farewell lingering in our ears, that sense of the utter indifference of cosmic things to our human losses and sorrows, which seldom fails to affect one at such a time, came upon us with singular force. The sun was shining brightly over the placid winter landscape; the air was crisp and clear.

"Nothing in Nature's aspect intimated
That a great man was dead!"

The last time I saw Spencer was in his bedroom at Brighton, and amid the details of our conversation, every one of which is naturally fresh in my memory, there is one that I specially recall. Just back from America, I told him of the deep interest I found everywhere taken

there in his work, and spoke of the immense range of his influence upon the world's thought.¹ His reply was: "I am satisfied; I am satisfied!" Yet his satisfaction was offset by disappointment. The completion of his *Philosophy* had been so long delayed that it brought him but little of the exhilaration that might have been anticipated; his chief pleasure was in the simple sense of emancipation from long-continued toil.² And worse than weariness and this apathy of disillusion was the realisation of the fact that precisely that part of his gospel upon which he himself set the greatest value had apparently been preached in vain. His practical teachings on one important matter were commonly unheeded, even where they were not openly flouted; the socialism which he had made it one of his chief purposes to resist was, in spite of all his efforts, yearly gaining ground; signs of reaction were everywhere manifest in religion, politics, and society; militarism and imperialism were rampant; and the great nations of the world, dominated by

¹ No other philosophic works have, I suppose, been translated into so many languages as his. Versions of at any rate a great part of the *Synthetic Philosophy* exist in French, German, Italian, and Russian. But of all his writings, the book on education has apparently been most widely influential. It has appeared in—among other tongues—modern Greek, Sanskrit, and Arabic; and education in Mexico and the South American States has been greatly moulded by it. In 1901 Spencer wrote me that he had learned some time before this from the Chinese Ambassador that two translations of his writings were in progress in China—one into the Northern and the other into the Southern dialect. I once saw it stated, on the authority of a missionary, that the influence of the Spencerian philosophy was the chief obstacle to the spread of evangelical Christianity among the cultured classes of Japan.

² Preface to *Principles of Sociology*, vol. iii.

a sordid and materialistic spirit, were moving further and further away from what he had always proclaimed to be the true principles of sanity and righteousness. All these things filled him with sorrow and alarm. In earlier life he would doubtless have found encouragement in the thought that, deplorable as such reactionary tendencies are, they will not permanently interrupt the world's true progress. But it is hard for a man of eighty to derive much comfort from reading "what the centuries say against the hours."

VI.

Spencer's was a simple and transparent nature, and the salient features of his character may be easily marked out.

A man of absolute independence of thought and judgment, and defiant of authority and tradition in every form, he was a born nonconformist in the extremest sense of the word. A maker of many books, yet in no sense a bookman, with a range of knowledge often described as encyclopædic, yet always impatient as a reader even on subjects directly connected with his own lines of work; he cared little—too little, as he afterwards came to acknowledge—for what others had thought and done; and, heedless of great names and established doctrines, pushed his own way resolutely along the paths of investigation in which he is now recognised to have been a pioneer. This trait was associated on the moral side with splendid fearlessness and courage. Throughout life he spoke out what he thought without calculation of consequences. He never once paused to consider the expediency of

any view; he readily espoused the most unpopular causes; was wholly indifferent to the obloquy called forth by his heretical opinions of men and things; held tenaciously to what he believed to be true and right; and did not flinch even if, as a result, he found himself in a minority of one.

His fertility of mind was as astonishing as his independence. This is shown by almost every page of his *Synthetic Philosophy*, but remains equally clear if we leave that work entirely out of consideration. For, in all sorts of matters lying wholly outside the range of his more special interests, his originality and inventiveness were constantly revealed. We have seen how, as a boy, he made his own solutions of problems in geometry. In early life he devised all kinds of contrivances for all kinds of purposes—for rationalising writing, for example, for a philosophic language; for a new nomenclature of colours, based on the plan of the mariner's compass; and the list of his inventions—which includes a scheme for aerial locomotion, a binding pin for loose music, a fishing-rod joint, an invalid bed, a new escapement for watches, and improvements in planing machinery, in dressing artificial flies, and in the printing press—is too long to be reproduced in detail. These are simply illustrations of a "constructive imagination" of enormous power, which worked with almost equal ease in many directions. Of that "constructive imagination" the *Synthetic Philosophy* is merely the greatest product.

In personal life Spencer impressed most people who met him but casually as rather cold, remote, and difficult of access; and it was only as one came to know him well that one succeeded in

* *Autobiography*, ii., 441, 442.

breaking through his reserve, and came to see and appreciate the more sympathetic aspects of his character. He was never, indeed, very easy to get on with. What he himself calls his "abnormal tendency to criticism" was too much in the ascendant; sleeplessness and nervous dyspepsia, with the hypochondria which these engendered, made him occasionally irritable and sharp of tongue; and, having little tolerance for the prejudices and conventions of everyday life, he often seemed harsh in his judgments, and sometimes even needlessly censorious. Moreover, his emotional nature was kept under undue restraint by an intellect which sat in perpetual judgment upon it; the free play of feeling was repressed; and a certain consequent dryness and want of flexibility made one regret that among the sacrifices forced upon him by his life-work was that of those normal human relationships and responsibilities which would have done much to expand his feelings and give warmth and colour to the daily routine. But these limitations must never be allowed to blind us to his splendid positive qualities. His uprightness, purity, and scrupulous honesty, even in the pettiest

details, his conscientiousness, integrity, and single-hearted devotion to truth, filled all who knew him with admiration; and it is hardly too much to say that his moral greatness did not fall short of his intellectual greatness. Justice, as I have often said elsewhere, and as Spencer himself declares in the *Autobiography*, was the predominant sentiment with him, as it is the predominant note of his ethical system; and if in his strict adherence to this supreme principle he might sometimes have seemed exacting in the demands which he made upon others, it has always to be remembered that, unlike many professed teachers, he did not lower his standards when he came to apply them to himself. In our study of the writings of any great master it is always a satisfaction to feel assured that he strove, consistently and courageously, to live by his own creed. This was emphatically the case with Herbert Spencer.¹

¹ For a more detailed account of Spencer's personality and character I may refer the reader to two articles of my own—"Herbert Spencer: A Character Study" (*Fortnightly Review*, January, 1904), and "Herbert Spencer's *Autobiography*" (*Independent Review*, July, 1904).

CHAPTER II.

SPENCER'S EARLIER WORK—PREPARATION FOR
THE SYNTHETIC PHILOSOPHY—SPENCER AND
THE DOCTRINE OF EVOLUTION

THERE is no safer or more satisfactory approach to the study of any system of philosophy than by way of its evolution. If we want to put ourselves into a position to understand the attitude taken up by any great thinker towards the world and its problems—if we want to catch the personal note in his utterances, and to appreciate the relation of his own ideas to the intellectual movements of his time—we cannot do better than to make ourselves acquainted with the history of the development and consolidation of the great foundation principles of his thought. The general question, What was the nature of his teaching? may thus properly be preceded by one still more general, How came it to be what it was? To consider this latter question in relation to the *System of Synthetic Philosophy* is the purpose of the present chapter; in fulfilling which we shall not only lead up, by a kind of easy gradation, to that system itself, but shall also be able to reach some definite conclusions respecting Spencer's historic connection with the modern doctrine of evolution at large—a matter, as we shall see, of no small interest and importance.

I.

In the first place, then, we have to review the growth and solidification of

Spencer's thought—or, in other words, to trace the growth, as exhibited in his earlier writings, of that conception of evolution which was to constitute the foundation and backbone of the *Synthetic Philosophy*. Let us begin by making ourselves acquainted with the starting-point of his mental development—that is, with the general theory of things which was current during his early years, and under the influence of which, in common with all his contemporaries, he grew to maturity.

The period of Spencer's youth and ripening manhood was a period of transition in scientific and philosophic thought. On the ushering in of the century the old cosmology still held sway with unabated vigour, along with all those time-worn dogmas concerning human life and destiny which had grown up with it during ages of ignorance and superstition, and with which its own existence was now inextricably bound up. What that cosmology and what those dogmas meant is a matter of such common history that we need not linger over them here. Suffice it to say that the almost unquestioned doctrines of special creation, fixed types, and a recent origin of the universe lay at the bottom of them all, and that it was in the light of those doctrines that the world, man, and society were all interpreted.

But before the century had got far upon its way signs began to manifest themselves of an approaching change in the higher regions of thought. The special-creation hypothesis and the postulate of the world's recent origin and rapid manufacture had served well enough so long as their field had remained uninvasioned by the results of investigation—so long as they had not been confronted with definite facts. In perfect keeping with what little had been known of the universe in the darkness of the Middle Ages, they now required that nothing should be added to that knowledge to hold their place secure. But this could no longer be. The time came when investigation grew active, and definite facts, which could not be ignored, and which yet were irreverent enough to refuse to fit into the most sacred and deeply-cherished theories, began to accumulate with almost bewildering rapidity. The result was that the old conception of things began, little by little, to fall into disrepute, and the theological edifice of ages was shaken at its very foundations. Science showed, with a conclusiveness which remained untouched by all the special pleading with which her arguments and revelations were assailed, that the popular assumptions about the age of the world were absolutely untenable; that the commencement of life, and even of human life, upon our globe, so far from taking us back only a few paltry thousands of years, lay millions of ages behind us; and that such vague memorials of our race as have survived to us in sacred book and popular legend are as nothing compared with that tremendous mass of human experiences which will never find their historian. Worse than all, turning full upon the doctrine of special manufac-

ture, she opened up the grand geologic record, and read thence, as from the pages of a mighty volume, the long, stupendous story of those vast cosmic changes which, through æons of unreckoned time, have slowly moulded and fashioned the world into the condition in which we find it to-day.

That these revelations were of the most vital interest to all thinking men need hardly be said; nor is it necessary now to dwell on the feverish panic of the theologians, who hurried into the field with all their heavy artillery, prominent amid which was the great-gun argument, which had already done tremendous service on many another such occasion, that the very existence of Christianity was bound up with the story of the creation as narrated in the first chapters of the Hebrew Scriptures.¹ What is here of moment is to notice the general effect of the new discoveries upon the scientific mind. That effect was at the outset almost entirely negative. The old theories had been destroyed, but as yet there was nothing to take their place; the theological interpretation of the world's history was seen to be absurdly insufficient and unreasonable, but for the time being no scientific

¹ How fierce and obstinate was the opposition offered to the doctrine of evolution from this standpoint we of the present day find it no easy matter to imagine. Even such a man as Hugh Miller imported theological considerations into his scientific discussions, and, when other reasoning failed him, fell back upon the declaration that acceptance of evolution meant nullification of the central truths of Christianity. It has been reserved for a later generation, passing into a fresh phase in the history of evolutionary thought, to find out that there is, after all, no conflict between the old ideas and the new—a convenient discovery now that the new ideas can no longer be rejected.

interpretation to take its place appeared to be forthcoming. Hence followed a kind of intellectual interregnum, during which everything was vague, shifting, tentative. Meanwhile, however, things were by no means standing still. The unceasing activity of investigators in the special sciences resulted in vast accumulations of well-established facts, and thus yielded the materials in the absence of which nothing of real or permanent value could have been accomplished. And at the same time (largely, indeed, as a consequence of this extension upon all sides of the scientific domain) there was ever growing and deepening a conception of unbroken causation in cosmic changes, of the universality of law, and the unity of Nature and of natural processes—a conception in no small degree led up to by such discoveries as those of the undulatory theory of light and heat, and of the correlation of all the forces known to exact science.¹ Thus, in spite of the temporary suspense and hesitation, no time was being lost. As we can now see, the way was being slowly prepared for a great scientific generalisation—a generalisation which,

overthrowing all the old positions once and for all, was in the sequel to alter fundamentally the whole current of thought, as regards not only the outer organic world and its phenomena, but also the practical problems of life and society, of morality and religion.

II.

Such, in the briefest possible summary, was the general intellectual character of the period at which Spencer was preparing himself for the labours of his life. Even this sketch, imperfect as it necessarily is, will help us to understand the growth of his own ideas, and their relation to the changing thought of the day.

We have to go back to the year 1842, and to the series of letters on *The Proper Sphere of Government*, with which, then hardly more than a boy, he entered, as we have seen, upon his literary career.

With the pronounced individualism of this little work, which was doubtless the natural result of his home environment, though he may have owed something indirectly to the teachings of Humboldt, we have here no immediate concern. The pamphlet is significant for us from quite another point of view. In the attempt which is made in it to establish the nature, scope, and limits—that is, the fundamental principles—of civil government, there is everywhere implied a belief in the ultimate dependence of social organisation upon natural causes and natural laws. In other words, society is from first to last regarded not as a manufacture, but as a growth—a view which, though familiar enough in our own day, at all events in its theoretic aspects, was then little known, even as a matter of mere speculation. Throughout

¹ This tendency towards unification was, indeed, an outgrowth from the philosophy of the eighteenth century, and was at bottom merely one expression of that general simplification of life and thought which, as Mr. Morley has pointed out, "was the keynote of the revolutionary time." (See his *Rousseau*, vol. i., pp. 4, 5; and *Introduction to the Poetical Works of Wordsworth*, p. lxi.) It was the widespread desire for synthesis, indeed, which gave rise to the systematic work of Buffon and Linnaeus, and even to the great *Encyclopædia* itself. It is interesting to notice what Goldsmith, voicing the average conservative layman's opinion of his day, has to say about Montesquieu, one of the early leaders of this particular movement in speculation (*Inquiry into the Present State of Polite Learning*, chapter vi.).

the entire argument there run the conceptions of gradual changes naturally necessitated, and of the possibility of a better and better adjustment of man, physically, intellectually, and morally, to the needs imposed by the conditions of social life. As Spencer himself wrote, many years later, "In these letters will be found, along with many crude ideas," a "belief in the conformity of social phenomena to invariable laws," and "in human progression as determined by such laws."¹ All this revealed, even at so early a stage of mental growth, a well-defined tendency to regard the complicated and entangled phenomena of society from a strictly scientific point of view as phenomena exhibiting relations of cause and effect, and thus to be included in the realm of natural law. But it meant something more than this. The distinct and conscious acceptance of the doctrine that society is a thing not artificially pieced together, but of slow and natural growth, implied dissatisfaction with the current ideas of progress as an irregular and fortuitous process, and bore testimony to at least a vague germinal belief in a social development or evolution.

The questions thus raised and briefly dealt with came in for more thorough and extended treatment a few years later in Spencer's first considerable work, *Social Statics*. The conception of this volume had entered his mind not long after the appearance of the *Letters* in pamphlet form; for, owing to the rapid growth of his ideas, he soon became aware of the inadequacy of his handling of the vast problems there opened up. "The writing of *Social Statics*," he afterwards said, "arose from a dissatisfaction with the

basis on which the doctrines set forth in those letters were placed."² Even the briefest comparison of the two books is sufficient to show the enormous strides which his mind had taken during the seven critical years which divide them. In *Social Statics* almost everything is made to turn upon the doctrine—previously hardly more than hinted at—that from the very beginning of social life down to the present time there has been going on, and that still there is going on, a process of slow, but none the less certain, adjustment of the natures of men to society, and of the social organisation to the natures of its constituent units; this adjustment being the result of a perpetual interaction between units and aggregate which ever tends to bring them into more perfect adaptation the one to the other. Such adaptation, it is further contended, is produced by the direct action of circumstances upon the natures of men, and by the preservation and accumulation by inheritance from generation to generation of the modifications thus initiated; though another process comes in for passing recognition—the process of the dying out of those individuals who fail to adapt themselves to the changing conditions of their environment; which process may be conversely stated as the survival of those only who so far change as to fit themselves to the necessities imposed upon them by the totality of their surroundings. Here, it will be seen, is a faint and partial adumbration of the doctrine of the survival of the fittest in the struggle for existence. Moreover, another important point is emphasised—that all our social evils

¹ *Reasons for Dissenting from the Philosophy of M. Comte* (Essays, ii., 137, note).

² *Reasons for Dissenting from the Philosophy of M. Comte*.

and imperfections are due to want of complete adjustment between men and the conditions of social life—are, indeed, nothing more than the temporary jarrings and wrenchings of a machine the parts of which are not yet brought into thorough working order. Yet, as the process of adaptation is still continuing, and is in the nature of things tending ever to produce between units and aggregate a state of more perfect equilibrium, the inevitable if optimistic corollary is, that the evil which we deplore will in the end work itself out altogether, and that eventually all friction will entirely disappear: a prophecy which seems to point to a realisation of the gorgeous dreams of revolutionary speculators like Condorcet and Godwin, far as the arguments upon which it is based differ from their own. Finally, all these special changes in man and in society are regarded as phases only of a process of universal development or unfolding, which is everywhere conducting, in obedience to an inherent metaphysical tendency, to the production in man, as throughout the whole of the animate creation, of more complete individuation and higher and higher types.

We thus see that, unlike Darwin and Wallace, Spencer approached the question of general evolution not from the organic, but from the super-organic point of view—by the way of ethical and sociological investigations. His first conception of development was in the limited shape of progress—of development, that is, of man individually and in society; though this whole question of progress was from the outset regarded from the side of natural law. But his was not the mind to rest content with these vague and

partial glimpses of a stupendous truth. Before long he began to work his way round, through researches of quite a different character, towards the affiliation of these special and disjointed facts and inferences upon other facts and inferences of wider sweep and meaning.

His labours upon *Social Statics* had led him to a realisation of the important truth that beneath all the much-debated questions of morality and society lie the fundamental facts of biology and psychology; and that any really scientific or efficient treatment of man as a moral being or social unit must depend upon a thorough exploration of the problems of life and mind. Full of these ideas, he turned with increased enthusiasm to biological and psychological studies; and to the prosecution of various lines of research in connection with these two subjects, a large part, though by no means the whole, of his energies was for some time devoted.

The ten years which followed—the years between 1850 and 1860 (it is well to notice the dates, because, as we shall presently see, they have their own importance)—were years of great activity—an activity to be measured not so much by their productiveness, though that was sufficiently remarkable, as by the amazing growth and organisation of ideas which took place in them. During this period some twenty-five exhaustive articles from Spencer's pen were published in the leading organs of liberal thought; and in these articles, if we take them in the order of their appearance, we can trace a gradual closing in from all sides upon the great generalisations which were by-and-by to fall into their places as integral parts of a coherent system of thought. As a matter of fact, these years may be regarded, from the

point of view of the *Synthetic Philosophy* itself, as years of special and methodical training; and these essays, diverse as they are in form and matter, as separate and tentative contributions towards the treatment of various isolated phenomena which were ultimately to be taken up in their inter-relations and dealt with in the mass. It would be impossible here to subject these essays one by one to anything like close analysis, even if it would materially further our present purpose to do so. But a few words must be devoted to their general drift and character; and, should one or two of them be made the subjects of special mention, it will not be because these are to be considered the most significant in themselves, but simply because they are the most important for the object which at the moment I have in view.

Probably the points which would most strike anyone reading these essays for the first time would be their strong grasp upon deep-lying principles and their extraordinary originality. On every page they reveal, be the subject what it may, an astonishing independence of thought and an absolute freedom from all trace of traditional methods and ideas. It was this freshness of treatment and firmness of touch which perhaps most attracted the attention of thoughtful readers when they were first published—for the most part anonymously—in the pages of the various English magazines and reviews. But, turning back to them to-day and re-reading them in their mutual relations, we must be impressed by something beyond the depth, clearness, and vigour of mind to which they everywhere bear witness; and that something is the essential unity of their thought, the oneness of idea which is throughout seen to underlie and inform

the extraordinary diversity of materials with which they deal. It matters not whether the author is concerned with the moot questions of physiology and psychology; or with the intrinsic principles of a correct literary style; or with the changes of the sidereal system; or with ill-timed and hasty political panaceas; or with curiosities of social manners and behaviour: all these subjects are systematically approached from one point of view; all are made to cluster about and find interpretation in one dominant hypothesis. And what is this hypothesis? What is this great cardinal doctrine which is thus made to weld together subjects so diverse that on any merely superficial examination they would never be supposed to possess anything in common? It need hardly be said that it is the doctrine of development or evolution—a doctrine which manifests itself in every succeeding essay with continually increasing distinctness, and which is thus shown to be taking year after year a stronger and stronger hold upon the author's mind and a deeper and deeper place in all his speculations.

As early as 1852 he had published in a periodical called the *Leader* a short paper on "The Development Hypothesis," which was afterwards referred to by Darwin, in the historical sketch prefixed to *The Origin of Species*, as presenting the general argument for the developmental as against the special-creation interpretation of the universe with remarkable cogency and skill. But, while reasons were here briefly but clearly stated for a belief in the gradual development of all organisms, not excluding man, it must be remembered that the essay does not contain any indication of factors adequate to the production of the alleged effects. One

process only is recognised—that of direct modification by the conditions of life; and as with this process alone it is obviously impossible to account for all the facts of the organic world, the way was left open for supporters of the older doctrine to make good a temporary escape.

But this noteworthy little paper, though it contained a kind of systematised profession of faith, was only, after all, a starting-point for a long and thorough investigation of various aspects of the subject with which it was concerned. Its leading ideas, as I have said, came little by little to suffuse all his work, and in the years that followed they underwent consolidation and reached an expression at once more definite and more complete. Was it a question of deducing a theory of population from the general law of animal fertility? Then we find distinct recognition of an advance from lower to higher brought about by excessive reproduction and the continual pressure of rapidly-multiplying organisms upon the slowly-increasing means of support. Did the discussion turn upon the elaboration on a scientific basis of a true philosophy of style? Then, along with the application to the special phenomena of expression of the general law of "the line of least resistance," there is further reached the generalisation—set down as applying to all products both of man and of Nature—of the two fundamental processes of evolution, the process of differentiation and the process of integration; since it is shown that a highly-developed style "will be not a series of like parts simply placed in juxtaposition, but one whole made up of unlike parts that are mutually dependent."¹ Are the

right and wrong objects and methods of education brought up for consideration? Then the answer given is firmly established upon the doctrine of a gradual unfolding of the mental faculties in obedience to natural law; such unfolding taking the form of a double-sided change from the simple to the complex, and from the indefinite to the definite. So is it with all other subjects whatsoever. In the essay on *Manners and Fashion*, for example, emphasis is laid upon the truths that the various forms of restraint exercised by society as an aggregate over its individual members—such restraints being now clearly differentiated into ecclesiastical, political, and ceremonial—are all natural developments from one primordial form; and that the divergence of each from the others and of all from such primordial form takes place "in conformity with the laws of evolution of all organised bodies." And once again a similar line of argument is followed in the extremely suggestive articles on the *Genesis of Science* and the *Origin and Function of Music*. Finally, in the elaborate essay on *Progress: Its Law and Cause*, evolutionary principles are enunciated with the utmost distinctness. The law of progress is shown to consist in the transformation of the homogeneous into the heterogeneous (an imperfect statement afterwards completed by the addition of a factor for the time being overlooked¹); and this process is illustrated by examples taken from all orders of phenomena, while the cause of the transformation is found in the law of the multiplication of effects, afterwards worked out fully in *First Principles*.

¹ This additional factor being, as we shall presently see, increase in coherence. A change must consist in increasing heterogeneity and increasing coherence, to constitute evolution.

¹ *The Philosophy of Style*. First published in the *Westminster Review*, October, 1852.

In this essay, too, as in that on the *Development Hypothesis*, the general law of evolution is presented as holding good in the production of species and varieties, though here again direct adaptation to the conditions of existence is the only factor recognised as playing a part in the stupendous drama of unfolding life.

III.

I have said enough, I think, to show how active was the period with which we have just been dealing—active alike in original production, in the absorption of fresh material, and in the organisation of new ideas. But these five-and-twenty essays do not represent the whole of Spencer's labours during this time. His studies in psychology, of which the essays of *The Universal Postulate* (1853) and *The Art of Education* (1854) were the immediate results, took more systematic form about the date of the publication of the latter paper; and in 1855 the first edition of his *Principles of Psychology* made its appearance. As this work was subsequently included as a portion of the two volumes on the *Principles of Psychology* in the Synthetic System, any analysis of its contents does not fall within the scope of the present chapter. One remark may, however, be appropriately made ere we pass on. Ignoring for the moment the immense developments of psychology during the past half-century, and taking the purely historic point of view, it is well that we should remind ourselves how enormously this book was in advance of the whole thought of the time—not the common thought only, but the cultivated thought as well.¹ It was in the

fullest sense of the term an epoch-making book, because it placed the study of mind upon an entirely new basis, and, by applying to it that hypothesis of evolution which, for the time being, even the biologists refused to accept indicated a fresh method of inquiry, which in the long run has entirely revolutionised the subject. Hitherto, mental philosophy had concerned itself only with the facts of adult human consciousness. Spencer, breaking away from all the traditions of the schools, started out on an original course of investigation, in the wide sweep of which he took in not only the mental growth of children and savages, but also the phenomena of intelligence as displayed by the whole range of the animate world down to the lowest creatures. To quote his own words, "Life in its multitudinous and infinitely varied embodiments has arisen out of the lowest and

Stuart Mill. The bias of this distinguished thinker in favour of the experiential philosophy was so strong that he hesitated to accept the compromise which the developmental view offered to effect between the special doctrines of his own school of pure empiricism and those of the intuitionists. Yet he came at length to recognise how large a step in advance the evolutionists had really made. Dr. Carpenter, referring to Mill's gradual change of front, quotes from a letter addressed to him on the subject by Mill himself, part of which runs as follows: "There is also considerable evidence that such acquired facilities of passing into certain modes of cerebral action can in many cases be transmitted more or less completely by inheritance. The limits of this transmission and the conditions on which it depends are a subject now fairly before the scientific world; and we shall doubtless in time know much more about them than we do now. But so far as my imperfect knowledge of the subject extends, I take much the same view of it that you do, at least in principle." (See Carpenter's *Principles of Mental Physiology*.)

¹ How true this was may be strikingly shown by a consideration of the attitude taken up towards the evolutionary psychology by John

simplest beginnings by steps as gradual as those which evolved an homogeneous germ into a complete organism." Clearly, then, the whole conception of the work is evolutionary. As Spencer many years afterwards wrote of it, the development hypothesis, though not distinctly proclaimed till towards the close, is tacitly implied on almost every page.¹

It is not, I think, needful to pause, after even such a rapid summary of the activities of these ten memorable years, to say anything about the extraordinary perversion of judgment which has led critics from whom, having regard to their position and general culture, something better might have been expected, to treat these writings as "stock-writings," and to refer to their author as having "the weakness of omniscience" and a desire to discourse on all kinds of subjects. We are now in a fair position to realise how much, or rather how little, these curiosities of oracular criticism are really worth. So far from Spencer's various essays during this decade being merely examples of journalistic versatility (as such estimates would imply), we have seen how they are united and held together by that thread of common principle and common purpose which runs through them all. Casual and unrelated as they may appear to superficial readers, they may, broadly speaking, be regarded as separate and methodical studies in preparation for a complete working out in general and in detail of the doctrine they all illustrate—the doctrine of universal evolution.

Here one important point has to be emphasised. The real significance of Spencer's versatility is missed if we fail to take account of the fact that in treating

of all sorts of different topics, from the Nebular Hypothesis to manners, fashions, architectural types, music, dancing, and the characteristics of style, he made substantial contributions to the discussion of nearly all of them. Specialists in almost every field acknowledge their indebtedness to him, and find it necessary, even when it is only to express disagreement, to take his speculations into consideration, and define their own position in regard to them. This is not, of course, because Spencer himself wrote as a specialist upon all these various themes. Comprehensive as his erudition was, this would have been impossible. The explanation must rather be sought in his extraordinary penetration, and even more particularly (as I have elsewhere shown²) in his marvellous powers of generalisation. It seemed as if in his hands facts apparently the most alien entered into wholly unexpected relationships; as if the phenomena under study, whatever the line of inquiry might be, grouped themselves of their own accord into such patterns as to make recognition of the laws they exemplified inevitable.

IV.

The foregoing survey of Spencer's earlier and more miscellaneous writings should have interest and value because both of the light that it throws upon his mental growth and of the help it may presently give us in the study of his later systematic work. But, beyond this, I have had, in taking it, a more special object in view. For it is only by reference to such a record that we can understand Spencer's historic position in modern thought—that is, his true relation to the great doctrine of evolution.

¹ *Autobiography*, i., 469.

² *Westminster Review*, January, 1914.

On this question I want to make myself as clear as possible, because it is one in reference to which there has long been and is still current a great deal of misconception, even among the generally well informed. Vagueness and instability in the meaning of certain words in common use have been in this case, as often elsewhere, a main cause of confusion in ideas; another instance being thus furnished of the truth of Bacon's dictum that, while we fondly suppose that we govern our vocabulary, it not infrequently happens that, as a matter of fact, our vocabulary governs us. In the common speech of the day the word "Darwinism" is almost invariably employed as if it were absolutely synonymous with the word "evolution"; the one is treated as being at all points not only coextensive, but also cointensive with the other. Two notable results of this indiscriminate use are: first, that Darwin is habitually regarded as the author of the modern doctrine of evolution at large; and, secondly, that this doctrine has, ever since the publication of his *Origin of Species*, become so intimately bound up with the special views therein contained that by the soundness or unsoundness of his arguments the whole theory of evolution is supposed to stand or fall.

That all this has given rise to much deplorable confusion in the discussion of evolutionary questions in general, I do not now pause to show. Here we are concerned merely with the entirely unjust and erroneous estimate of the historical significance of Spencer's work, and consequently of the relations of Spencer himself to the greatest of modern generalisations, which originated from, or which at least has been largely kept alive by, the misconception of which I speak.

To what extent this unjust and erroneous estimate has taken root, even in more cultivated thought, may be shown briefly and conclusively by one or two quotations. For example, we find the *Saturday Review* remarking, in the course of an article on Professor Tyndall's famous Belfast Address, now some thirty years since, that "what Darwin has done for physiology [!] Spencer would do for psychology, by applying to the nervous system particularly the principles which his teacher had already enunciated for the physical system generally." In much the same strain, and obviously under the same impression that Spencer's ideas were all obtained at second-hand,¹ and are, in fact, little more than precarious inferences from other people's discoveries, an American writer of some eminence, Colonel Higginson, once declared: "It seems rather absurd to attribute to him [Spencer] as a scientific achievement any vast enlargement or further generalisation of the modern scientific doctrine of evolution." Once more, sketching

¹ There has perhaps never been so original a thinker as Spencer, who has had such a hard struggle to get or keep possession of the credit due to his own ideas. Not only is he thus reduced to the position of a mere aide-de-camp to Darwin, but many of his critics are never weary in insisting, in spite of all disproof of their assertions, upon his vital indebtedness to Auguste Comte. Even his educational theories have repeatedly been traced back to Rousseau's *Émile*, though, as he himself informed me, he had never even heard of that work at the time his own book on education was written (see my *Rousseau and Naturalism in Life and Thought*, p. 206, note). The singularly distorted current ideas of his general relation to evolution, above animadverted upon, may be partly the results of the anonymity of his earlier publications; and all wrong-headedness is marvellously tenacious of life.

the college life of his friend, the late lamented Professor Clifford, with whose untimely death so many brilliant promises came to naught, Sir Frederick Pollock says: "Meanwhile, he [Clifford] was eagerly assimilating the ideas which had become established as an assured possession of science by Mr. Darwin, and were being applied to the systematic grouping and gathering together of human knowledge by Mr. Herbert Spencer." Similarly, a professed historian of philosophy—M. Lefèvre—refers to Spencer as "relying on the marvellous conjectures of Darwin." And, finally (not to weary by needlessly multiplying quotations), a man from whom, on account of his own contributions to psychology and wide knowledge of English thought, a more correct judgment might surely have been looked for—the late M. Taine—thus summed up his view of Spencer's work: "Mr. Spencer possesses the rare merit of having extended to the sum of phenomena—to the whole history of Nature and of mind—the two master-thoughts which for the past thirty years have been giving new form to the positive sciences; the one being Mayer and Joule's Conservation of Energy, the other Darwin's Natural Selection."

Now, all this, to the extent to which expressly or by implication it relegates Spencer to the position merely of an adapter, enlarger, or populariser of other men's thoughts, is entirely false and unfounded, as the rapid survey of his earlier writings which we have just taken makes absolutely clear. So far from its seeming "rather absurd" to credit Spencer with any great personal contribution to the formulation of the doctrine of evolution; so far from his being in any sense of the term a pupil or unattached follower of Darwin; we

have seen that he had worked his own way independently, from a different starting-point and through an entirely dissimilar course of investigation, to a conception of evolution as a universal process underlying all phenomena, before Darwin himself had made public his special study of the operation of one of the factors of evolution in the limited sphere of the organic world. A simple comparison of dates will serve to set this matter at rest. The first edition of the *Origin of Species* was published in the latter part of 1859. The essay on the *Development Hypothesis*, in which the transformation theory was stoutly maintained, appeared in 1852; in 1855—or four years before the advent of Darwin's book—there came the first edition of the *Principles of Psychology*, in which the laws of evolution (already conceived as universal) were traced out in their operations in the domain of mind; and this was followed in 1857 by the essay on *Progress: Its Law and Cause*, which contains a statement of the doctrine of evolution in its chief outlines, and an inductive and deductive development of that doctrine in its application to all classes of phenomena. Spencer's independence of Darwin is thus placed beyond possibility of question.

Let it not be imagined that I am endeavouring in the slightest degree to underestimate the special value of Darwin's work. Yielding him the fullest meed of praise for the immense part which he played in the development of scientific thought, I am aiming only to show, as simple justice requires to be shown, and as, with the fine modesty which characterised him, he himself endeavoured to show, that it is historically incorrect to speak of him as the father of the modern doctrine of

evolution. What Darwin did was to amass an enormous number of facts from almost every department of biological science, and by the persistent labour, patient examination, and searching thought of many studious years, to establish, once and for all, not the reality of evolution, nor even the laws and conditions of evolution, but the operation of one of the main factors of evolution—a factor which, though it had till his time entirely eluded the scientific mind, was yet required to render comprehensible a vast array of phenomena otherwise without interpretation. How near Spencer's own investigations had led him to a realisation of the process of natural selection, or, as he afterwards called it, the survival of the fittest in the struggle for existence, we have already been able to remark; and he himself took occasion to point this out when, in the course of this later work, he came to deal more systematically with the whole problem of animal fertility and its practical implications.¹ But the factors mainly relied

upon by him, in common with all pre-Darwinian developmentalists, were the direct action of the environment and the inheritance, with increase, of functionally-produced modifications; and as these processes, whatever may be their individual importance, are obviously incapable of throwing light upon a large part—indeed, the larger part—of the facts which pressed for explanation, the theory of evolution could not for the time being hope for inductive establishment. Darwin's book put the whole question upon a new foundation, by exhibiting a process which *did* account for the hitherto unmanageable facts; and undoubtedly it was thus to a large extent effectual in bringing the general theory into open court as an entertainable hypothesis. But while all this is freely conceded—while the greatness of Darwin's work in itself, and its importance as a contribution to scientific thought, are acknowledged without hesitation, it has still to be remembered that that work was special and limited in

¹ See *Principles of Biology*, § 373, note. The whole of this very interesting note should be studied carefully, not only because it makes clear the scientific relations of Spencer and Darwin, but also for the foreshadowing which it contains of a reaction against that exclusive recognition of natural selection which soon became typical of biological students at large. The fundamental fact of evolution being now universally accepted, scientists of the present day are divided into two hostile camps upon the question of the processes of evolution: one party, often described as the neo-Darwinian, holding to natural selection, and to that alone; the other, antithetically called the neo-Lamarckian, maintaining that other factors have to be taken into account. The controversy, which mainly turns upon the problem as to whether or not acquired characters are inheritable, is now for the most part immediately connected with the writings of Professor Weismann, in which an elaborate

attempt is made to prove that, of all alleged evolutionary factors, natural selection is alone demanded by facts and supported by evidence. Spencer himself remained firm to the position adopted in the note just referred to, his contributions to the discussion being the essays on *The Factors of Organic Evolution* (1886); *A Counter-Criticism* (1888); *The Inadequacy of Natural Selection* (1893); and *A Rejoinder to Professor Weismann* (1893). It may be interesting to add that, when he came to write of the appearance of the *Origin of Species*, Spencer could not remember whether he was vexed at the time by the thought that in 1852 he had failed to carry further the idea then expressed, "that among human beings the survival of those who are the select of their generation is a cause of development." On the whole, he did not doubt that, if any such feelings arose, they were overwhelmed by gratification on seeing the theory of organic evolution at length fully justified (*Autobiography*, ii., 50).

character, and that with the general doctrine of evolution at large it had itself nothing whatever to do. The laws of evolution as a universal process—a matter which the aims and objects of Darwin's work did not lead him to touch—were worked out by Spencer irrespectively of the special process of natural selection: and when Darwin's book appeared, that process fell into its place in his general system, quite naturally, as a single manifestation of a far wider law—the law of equilibration, and therefore as a supplementary, and not in any way as a disturbing, element. Thus it appears that if any one man is to be looked upon as the immediate progenitor of a doctrine which, in common phraseology, may be said to have been to some extent in the

air—a “truth of science, waiting to be caught”—that man is not he who first elucidated one factor of its process in one domain of phenomena—the biological; but rather he who first seized upon it as a comprehensive law, underlying all the phenomena of the universe. In a word, it is not Charles Darwin, but Herbert Spencer.

We have thus followed the general course of Spencer's thought through what, in the light of his subsequent work, must be regarded as the period of experiment and preparation. We now turn from these earlier writings to that colossal undertaking to which the greater part of the energies of his after-life was to be devoted—the *System of Synthetic Philosophy*.

CHAPTER III.

THE SYNTHETIC PHILOSOPHY—FIRST PRINCIPLES—THE PRINCIPLES OF BIOLOGY AND OF PSYCHOLOGY.

I.

EARLY in the course of the composition of the *Principles of Psychology* in their original form—that is, in 1854—Spencer had reached that conception of evolution as a universal process which he subsequently worked out in detail in the essay on *Progress: Its Law and Cause*. The writing of this article, which first saw the light in the *Westminster Review* for April, 1857, doubtless helped in

large measure to systematise and co-ordinate the various ideas that were then lying scattered in his mind. It was in the following year, while he was engaged in preparing a long essay in defence of the Nebular Hypothesis, that there dawned upon him the possibility of dealing in a more methodical and connected manner than he had hitherto found practicable with those foundation-principles of evolution which he had been gradually formulating during the

miscellaneous studies of the past eight or nine years. Instead of treating the diverse phenomena of life and society in a fragmentary manner, why should he not consider them after some orderly plan and in their mutual relationships? The idea took root, developed rapidly, and before long assumed the proportions of an elaborate scheme, in which all orders of concrete phenomena were to fall into their places as illustrations of the fundamental process of evolution. Thus the conception of evolution now presented itself to him as the basis of a system of thought under which was to be generalised the complete history of the knowable universe, and by virtue of which all knowledge was to be unified by the affiliation of its various branches upon the ultimate laws underlying them all. Such was the origin of the *Synthetic Philosophy*.

Though a rough sketch of the main outlines of the system as they occurred to him at the time was mapped out almost immediately,¹ it was not till the following year, 1859—a year otherwise made memorable by the publication of Darwin's book—that a detailed plan of the various connected works in which these conceptions were to be developed was finally drawn up; and not till March, 1860, that it was made public in the form of a prospectus. Spencer's original intention was to issue the proposed work to subscribers in periodical parts. This course was persevered in till the publication of the forty-fourth division, in 1876, completing the first volume of the *Principles of Sociology*. It was then discontinued, and from that date onward the publication was in volume form only.

The following is a reprint, slightly

condensed by the omission of some explanatory matter not now of any special interest, of the programme as originally given to the world :—

FIRST PRINCIPLES.

PART I. The Unknowable. Carrying a step further the doctrine put into shape by Hamilton and Mansel; pointing out the various directions in which science leads to the same conclusions; and showing that in this united belief in an Absolute that transcends not only human knowledge, but human conception, lies the only possible reconciliation of Science and Religion.

II. Laws of the Knowable. A statement of the ultimate principles discernible throughout all manifestations of the Absolute—those highest generalisations now being disclosed by Science which are severally true not of one class of phenomena, but of *all* classes of phenomena; and which are thus the keys to all classes of phenomena.

[In logical order should here come the application of these First Principles to Inorganic Nature. But this great division it is proposed to pass over; partly because, even without it, the scheme is too extensive; partly because the interpretation of Organic Nature after the proposed method is of more immediate importance. The second work of the series will therefore be]

THE PRINCIPLES OF BIOLOGY.

VOL. I.

PART I. The Data of Biology. Including those general truths of physics and chemistry with which rational biology must set out.

II. The Inductions of Biology. A statement of the leading generalisations which naturalists, physiologists, and comparative anatomists have established.

III. The Evolution of Life. Concerning the speculation commonly known as the Development Hypothesis—its *a priori* and *a posteriori* evidences.

VOL. II.

IV. Morphological Development. Pointing out the relations that are everywhere traceable between organic forms and the average of the various forces to which they are subject; and seeking in the cumulative effects of such forces a theory of the forms.

¹ See *Autobiography*, ii., 15, 16.

V. Physiological Development. The progressive differentiation of functions similarly traced; and similarly interpreted as consequent upon the exposure of different parts of organisms to different sets of conditions.

VI. The Laws of Multiplication. Generalisations respecting the rates of reproduction of the various classes of plants and animals; followed by an attempt to show the dependence of these variations upon certain necessary causes.

THE PRINCIPLES OF PSYCHOLOGY.

Vol. I.

PART I. The Data of Psychology. Treating of the general connections of mind and life, and their relations to other modes of the Unknowable.

II. The Inductions of Psychology. A digest of such generalisations respecting mental phenomena as have already been empirically established.

III. General Synthesis. A republication, with additional chapters, of the same part in the already published *Principles of Psychology*.

IV. Special Synthesis. A republication, with extensive revisions and additions, of the same part, etc., etc.

V. Physical Synthesis. An attempt to show the manner in which the succession of states of consciousness conforms to a certain fundamental law of nervous action that follows from the First Principles laid down at the outset.

Vol. II.

VI. Special Analysis. As at present published, but further elaborated by some additional chapters.

VII. General Analysis. As at present published, with several explanations and additions.

VIII. Corollaries. Consisting in part of a number of derivative principles which form a necessary introduction to Sociology.

THE PRINCIPLES OF SOCIOLOGY.

Vol. I.

PART I. The Data of Sociology. A statement of the several sets of factors entering into social phenomena—human ideas and feelings considered in their necessary order of evolution; surrounding natural conditions; and those ever-complicating conditions to which Society itself gives origin.

II. The Inductions of Sociology. General facts, structural and functional, as gathered from a survey of societies and their changes; in other words, the empirical generalisations that are arrived at by comparing different societies and successive phases of the same society.

III. Political Organisation. The evolution of governments, general and local, as determined by natural causes; their several types and metamorphoses; their increasing complexity and specialisation; and the progressive limitation of their functions.

Vol. II.

IV. Ecclesiastical Organisation. Tracing the differentiation of religious government from secular; its successive complications and the multiplication of sects; the growth and continued modification of religious ideas, as caused by advancing knowledge and changing moral character; and the gradual reconciliation of these ideas with the truths of abstract science.

V. Ceremonial Organisation. The natural history of that third kind of government which, having a common root with the others, and slowly becoming separate from and supplementary to them, serves to regulate the minor actions of life.¹

VI. Industrial Organisation. The development of productive and distributive agencies considered, like the foregoing, in its necessary causes; comprehending not only the progressive division of labour and the increasing complexity of each industrial agency, but also the successive forms of industrial government as passing through like phases with political government.²

¹ In their published form these three divisions are entitled respectively: *Political Institutions*; *Ecclesiastical Institutions*; *Ceremonial Institutions*; and the last named is properly made to take precedence of the other two. A part on *Domestic Institutions* is inserted (as Part III.) after the Inductions, and this of course disturbs the subsequent numbering of the divisions, as well as, to some extent, the volume arrangement; the first two volumes, as outlined, having expanded into three.

² This division and the whole of Vol. III. were skipped by Spencer when, led by increasingly poor health to the belief that the entire scheme could never be carried out, he decided at all hazards to push on with the far more

Vol. III.

VII. **Lingual Progress.** The evolution of languages regarded as a psychological process determined by social conditions.

VIII. **Intellectual Progress.** Treated from the same point of view: including the growth of classifications; the evolution of science out of common knowledge; the advance from qualitative to quantitative prevision, from the indefinite to the definite, and from the concrete to the abstract.

IX. **Æsthetic Progress.** The fine arts similarly dealt with: tracing their gradual differentiation from primitive institutions and from each other; their increasing varieties of development; and their advance in reality of expression and superiority of aim.

X. **Moral Progress.** Exhibiting the genesis of the slow emotional modifications which human nature undergoes in its adaptation to the social state.

XI. **The Consensus.** Treating of the necessary interdependence of structures and of functions in each type of society and in the successive phases of social development.

THE PRINCIPLES OF MORALITY.

Vol. I.

PART I. **The Data of Morality.** Generalisations furnished by biology, psychology, and sociology, which underlie a true theory of right living; in other words, the elements of that equilibrium between constitution and conditions of existence which is at once the moral ideal and the limit towards which we are progressing.

II. **The Inductions of Morality.** Those empirically established rules of human action which are registered as essential laws by all civilised nations: that is to say, the generalisations of expediency.

III. **Personal Morals.** The principles of private conduct—physical, intellectual, moral, and religious—that follow from the conditions to complete individual life; or,

important volumes on Ethics. The *Sociology* was ultimately completed by the publication of divisions on *Professional Institutions* and *Industrial Institutions*; but in these the matter was less thoroughly organised than in preceding parts, and in places signs of haste and weariness were quite apparent. Vol. III., as originally planned, had by this time been dropped from the scheme.

what is the same thing, those modes of private action which must result from the eventual equilibration of internal desires and external needs.

Vol. II.

IV. **Justice.**¹ The mutual limitations of men's actions, necessitated by their coexistence as units of a society—limitations the perfect observance of which constitutes that state of equilibrium forming the goal of political progress.

V. **Negative Beneficence.** Those secondary limitations, similarly necessitated, which, though less important and not cognisable by law, are yet requisite to prevent mutual destruction of happiness in various indirect ways: in other words, those minor self-restraints, dictated by what may be called passive sympathy.

VI. **Positive Beneficence.** Comprehending all modes of conduct, dictated by active sympathy, which imply pleasure in giving pleasure—modes of conduct that social adaptation has induced and must render ever more general; and which, in becoming universal, must fill to the full the possible measure of human happiness.

I reproduce this historic document here for two reasons. First, it is important for the student of Spencer to have under his eye for reference and guidance such a general programme of the scope and aim of the system as a whole, and of the concatenation of its various parts. And, secondly, it is instructive to observe with what fidelity Spencer, in working out his system, adhered to his original plan. Any one who compares the above prospectus with the contents of the ten volumes in which the *Synthetic Philosophy* was finally embodied, can

¹ This part is practically co-extensive with *Social Statics*. Among various points of difference in the treatment of the same questions between the earlier and the later work, one specially calls for remark. In *Justice* the supernaturalistic elements of *Social Statics* have disappeared, and the whole discussion is based firmly on a naturalistic foundation.

hardly fail to be astonished by the remarkable correspondence between the original design and the completed edifice. Here and there changes will be noted in the order of the divisions; there are several considerable additions to the scheme; and, more important than all, the parts which were to have composed the third volume of the *Sociology* are left out altogether.¹ Otherwise, Spencer adhered to his prospectus with a fidelity which shows how fully he must have had the whole vast territory mapped out in his mind before he sat down to commit himself to the penning of a single line.

II.

The philosophic system of which we have thus before us an abstract or syllabus differs from all other comprehensive bodies of thought with which in its external characteristics it might be compared, alike in its method and its scope. In approaching the study of the *Synthetic Philosophy* we must try first to understand its uniqueness in both of these respects.

¹ That the *Sociology* none the less actually comprises three volumes is due to the expansion of the first two. There can, I think, be little reason to regret that Spencer abandoned his original intention of dealing with linguistic, intellectual, and aesthetic progress. Great as will be our gain when these subjects are systematically treated on the basis of evolution, Spencer himself was prepared neither by sympathy nor by training to do full justice to them; and though without question he would have said many things about them which would have been illuminating and suggestive, his discussion of them must necessarily, on the whole, have been unsatisfactory. Meanwhile, the gaps left are to some extent filled by certain of his essays—notably those on *The Genesis of Science*, *The Origin and Function of Music*, and *The Philosophy of Style*.

In the early days of philosophic speculation it was sufficient if, in the building up of his elaborate structure of doctrine, the thinker succeeded in making the various parts of his system coherent and harmonious among themselves. So long as they would hang together without internal friction or disorder, so long as in this way they would, verbally considered, produce the impression of organic unity, nothing more was required. How far they might or might not be congruous with the actual laws and processes of the universe was a question which, in the then condition of knowledge, was of comparatively small importance. Thus the Platos of old days, and the Hegels of more recent times, could start from whatever datum they chose to postulate, and spin their poetic webs of fanciful metaphysics without troubling themselves very seriously to consider whether the facts of the world were for or against them. In the former case, well and good; in the latter, *tant pis pour les faits*: in either event their work went on uninterrupted and untrammelled.¹ Wherever they looked out on the universe they saw nothing but a reflection of their own whims and theories; reminding us of Coleridge's brilliant metaphor of Jack Robinson between two mirrors, prolonged into an endless succession of Jack Robinsons. But Science, in opening up the arcana

¹ In Lord Bolingbroke's *Letter to Alexander Pope* there is a passage even more appropriate to certain later philosophers than to those he himself had in view when penning it: "Rather than creep up slowly, *à posteriori*, to a little general knowledge, they soar at once as far and as high as imagination can carry them. From thence they descend again, armed with systems and arguments *à priori*; and, regardless how these agree or clash with the phenomena of Nature, they impose them on mankind."

of the universe, has passed all such methods under summary condemnation. The fabled German is said, in the familiar story, to have evolved a camel out of the depths of his inner consciousness; and the monstrosity which he boldly offered to the world would have done well enough so long as no real camel had been examined and studied. But the importation of a genuine animal into the matter at once changes the attitude and increases the responsibilities of the would-be naturalist. His description of the camel must now not only possess the qualities of internal balance and abstract credibility, but must also meet the additional requirement of resemblance to the actual camel of zoology. The parable hardly needs a gloss. For this simply means that all philosophy worthy of the name must henceforth build upon foundations firmly laid in scientific truth. Any system that neglects science as its corner-stone stands self-condemned, and does not merit serious attention.

Now, the first characteristic mark of the Spencerian philosophy is that its vast superstructure is reared not independently of science, still less in spite of science, but out of the very materials that science itself has furnished. It is a body of doctrine which is not only verbally intelligible and logically harmonious within itself, but at every point challenges the supreme test of direct comparison with fact. Spencer proceeds in his task of organising knowledge by first examining separately the various concrete sciences in quest of the highest truth or truths that these will each yield; then, setting together the generalisations thus reached, he formulates from these the still wider generalisation in which they all merge. Close

analysis of this widest generalisation then reveals the ultimate axiom—a datum which, as referable to nothing beyond or behind itself, must be taken, so to speak, upon its own credentials, and accepted both as the final result of our inductive inquiry, and, in turn, as the foundation or the starting-point of any attempt at the synthetic, or deductive, reconstruction of philosophy.¹ Induction, then, is the method pursued from the first; the established truths of science are directly investigated; and by generalisation after generalisation—each tried and verified again and again by reference to all orders of concrete facts—we are led at last to a generalisation which comprises them all, beyond which we cannot venture without losing ourselves in mere speculation, and in which, therefore, we have to rest. I shall endeavour a moment to indicate the course of inquiry and thought which Spencer followed in thus working his way to the principles of his philosophy. But let me point out at once that, though this method of induction was rigidly adhered to, until its final results were obtained, those results were not allowed to remain in inductive form. This would have been to leave the system incomplete, for, while the processes of universal evolution would have been set forth, no *rationale* of those processes would have been suggested. As we shall presently see more clearly, the

¹ It is well not to lose sight of the fact that the most rigid method of induction does not relieve us of the obligation of postulating an unproved and unprovable principle. We must fasten the final link of our chain somewhere, if we have to introduce the foot of Jove for the purpose. Otherwise, our philosophy is without a basis, like the old Hindu theory of the universe. See the essay on "Mill *versus* Hamilton" (*Essays*, vol. ii.).

very purpose of philosophy demands that the laws of the universe revealed by induction shall be re-stated deductively. This re-statement Spencer undertakes in detail, exhibiting the laws revealed by his most comprehensive generalisations as necessary consequences of the ultimate datum to which they at last bring us. Hence the logical completeness of the Spencerian philosophy. It presents us on the one side with an empirical account of the laws and processes of the knowable universe, and then, translating these into deductive terms, it furnishes us with a rational history of the knowable universe as well.

What further has to be said about the building of the *Synthetic Philosophy* may be conveniently postponed until we come to consider the evolution of its fundamental principles. To clear the way for this, we have, first of all, however, to deal with another point. What meaning does Spencer himself attach to the word "philosophy"? What are the scope and limitations of his own work? Or, to phrase the question differently, what is it that, in the development of his system, he really undertakes to do?

The older philosophers demanded an explanation of existence; the problem for which they sought a solution was ontological—the problem of the nature of things; and, not content with the study of the phenomenal universe, they endeavoured to sound the mystery of absolute being. What is the primary cause of the cosmos? What is its final cause—the end for which it exists? These, and such as these, were the questions which generations of metaphysicians busied themselves to answer. With what result? With the result that failure followed every effort, and that every scheme, no matter how carefully planned, how

ingeniously developed, how attractive and plausible, was sooner or later forced to take its place among the curiosities of misapplied effort in the intellectual lumber-heap of the world. The futility of all the study devoted in the past to these perennially fascinating but perennially elusive questions—the absurdities that each fresh speculator will freely acknowledge as the characteristics of every system but his own—the total inadequacy of each new master-word to roll back for us the eternal gates that shut from human knowledge the final mystery of life: all these things in themselves sufficed to lead some of the clearest and sanest intellects of earlier days to an appreciation of the truth that the old-world riddle remains unsolved simply because it is insoluble.¹ Renewed efforts to read the enigma of the Sphinx can only result, therefore, in the same disappointment. What has never been accomplished in the past will never be accomplished in the future, merely because, in its very essence, the task is hopeless. Modern psychology shows us the reason of the inevitable failure by making clear the conditions under which all our thinking must be done—conditions which, when

¹ Goethe—among the first to appreciate to the full the philosophic consequences of the limitations of human faculty—again and again insisted that our business is with the laws and conditions of the phenomenal universe, and not with the ultimate mystery that lies behind them.

"Wie? Wann? und Wo?"

Die Götter blieben stumm.

Du halte dich ans Weil,

Und frage nicht Warum!"

Elsewhere he writes to this effect: "Man is born not to solve the problem of the universe, but to find out where the problem begins, and then to restrain himself within the limits of the comprehensible."

once duly recognised, reveal beyond the shadow of doubt or the possibility of question why it has been, is, and ever must be, futile for the human intelligence to attempt to rise from the relative and the phenomenal into the consideration of that absolute and noumenal existence of which these are but the manifestations.

Now, by philosophy—to begin with a negative statement of the matter—Spencer does not understand an effort to solve the ultimate problem of the universe. He postulates two categories—the Unknowable and the Knowable; and to the former of these, the proper domain of religion, he relegates, as lying beyond the scope of our inquiry, all those questions concerning the primary and final cause of the universe—its *whence*, its *why*, and its *wherefore*—with which all metaphysics have been principally concerned. What, then, is left us? The answer is simple. The true subject-matter of philosophy is not the problem of absolute cause and end, but of secondary causes and ends—not noumenal and unconditioned existence, but the manifestations of the noumenal in and through the conditioned and phenomenal. What we demand from philosophy, therefore, is not an explanation of the universe in terms of Being as distinguished from appearance; but a complete co-ordination, or systematic organisation, of those cosmical laws by which we symbolise the processes of the universe, and the interrelations of the various phenomena of which the universe, as revealed to us under the conditions of our intelligence, is actually composed. The old antithesis between common knowledge and what we call science on the one hand, and philosophy on the other, thus disappears. They are not essentially unlike; their differences

are differences in degree of generality and unification. "As each widest generalisation of science comprehends and consolidates the narrower generalisations of its own division, so the generalisations of philosophy comprehend and consolidate the widest generalisations of science. It is, therefore, a knowledge the extreme opposite in kind to that which experience first accumulates. It is the final product of that process which begins with a mere colligation of crude observations, goes on establishing propositions that are broader and more separated from particular cases, and ends in universal propositions. Or, to bring the definition to its simplest and clearest form: Knowledge of the lowest kind is *ununified* knowledge; science is *partially-unified* knowledge; philosophy is *completely-unified* knowledge."¹

III.

Such, then, are the methods and scope of the *Synthetic Philosophy*. We proceed now to the briefest possible statement of its foundation principles, merely premising that readers who are not specially interested in the more technical side of philosophic discussion may do well to pass on at once to the exposition of the doctrine of evolution in the next section.

If philosophy is to undertake the complete unification of knowledge, it is clear that it must establish some ultimate proposition which includes and consolidates all the results of experience. It is impossible for us here to follow Spencer, step by step, in the long and subtle argument by which this ultimate proposition is reached. In such broad statement as alone is compatible with

¹ *First Principles*, § 37.

the purposes we have now in view, the main stages of the inquiry may be just indicated, and no more. Philosophy, then, in the nature of things must start with certain assumptions, justifying them, as it goes on with its work, by exhibiting their congruity with all other dicta of consciousness. This is a proposition from which manifestly we cannot dissent without committing ourselves to absolute nihilism. Yet involved in it there is one primordial datum—the assumption (without which all thought would be impossible) that in the manifestations of the unknowable in and through the phenomenal universe congruities and incongruities exist and are cognisable by us. Setting out from this assumption, Spencer goes on to show that in the last analysis all classes of likeness and unlikeness merge in one great difference—the difference between object and subject. The profoundest distinction among the manifestations of the unknowable we recognise by grouping them into *self* and *not-self*.¹ His postulates, therefore, are “an unknowable power; the existence of knowable likenesses and differences among the manifestations of that power; and a resulting segregation of those manifestations into those of subject and object.”² These are postulates which common sense asserts, which in every step science takes for granted, and which no metaphysician has ever succeeded in destroying; and from these philosophy has to proceed to the achievement of its purpose as above set forth.

Pushing the argument through a consideration of space, time, matter, motion, force, the indestructibility of matter, and

the continuity of force, Spencer at length reaches his ultimate dictum—the persistence of force; by which “we really mean the persistence of some Cause which transcends our knowledge and conception.”³ This dictum—that the Force of the Universe is constant, since it “can neither arise out of nothing, nor lapse into nothing,” and can, therefore, be neither added to nor destroyed—is shown to possess the highest kind of axiomatic certitude for two reasons: it constitutes the required foundation for all other general truths; and it is a psychological necessity—that is, it remains stable and unresolvable—the one inexpugnable, yet inexplicable, element of consciousness. Of such persistence of force under the forms of matter and motion all phenomena are necessary results. Eliminate this conception, and consciousness collapses. “The sole truth which transcends experience by underlying it is thus the Persistence of Force. This, being the basis of experience, must be the basis of any scientific organisation of experiences. To this an ultimate analysis brings us down, and on this a rational synthesis must build up.”⁴

The first deduction drawn from this ultimate universal truth is that of the persistence of relations among forces, or what is commonly known as the uniformity of law, whence we pass to two important corollaries—the transformation and equivalence of forces (correlation) and the undulatory character, or rhythm of motion. The first of these follows naturally from the truth that, however much forces may change their form, the force of the universe remains constant; the latter is just as clearly a

¹ *First Principles*, § 44.

² *Ibid.*, § 45.

³ *First Principles*, § 62.

⁴ *Ibid.*, § 62.

necessary result of the antagonism of opposing forces. Both these principles are shown to hold good throughout the whole range of phenomena, from the physical and chemical to the psychical and social. These truths, then, are "philosophical" truths—they have that character of universality which constitutes them parts of philosophy, properly so-called. "They are truths which unify concrete phenomena belonging to all divisions of nature, and so must be components of that complete coherent conception of things which philosophy seeks."¹ But none the less they are truths of the analytical order, and "no number of analytical truths will make up that synthesis of thought which alone can be an interpretation of the synthesis of things."² The problem now before us will be set in a clearer light if we remember the relation, already noted, between the partially unified knowledge which we call science and the completely unified knowledge which is the aim of philosophy. The various sciences advance from the resolution of their phenomena into the action of certain factors to the larger question: How from such combined actions result the given phenomena in all their complexity? They thus arrive at special syntheses. But such syntheses, up to the most general, are more or less independent of one another; the syntheses of biology, for example, remain within the domain of biology, the syntheses of psychology within that of psychology. The business of philosophy is now to establish a universal synthesis, comprehending and consolidating such special syntheses.

"Having seen that matter is indestructible, motion continuous, and force persistent—having seen that forces are everywhere undergoing transformation, and that motion, always following the line of least resistance, is invariably rhythmic, it remains to discover the similarly invariable formula expressing the combined consequences of the actions thus separately formulated."³

It is from this fresh point of departure that Spencer proceeds to reduce to systematic and comprehensive expression the laws of that continuous redistribution of matter and motion which is going on throughout the universe in general and in detail. All sensible existences, and the aggregates which they form, have their history, and this history covers the entire period between their emergence from the imperceptible and their final disappearance* again into the imperceptible. The redistribution of matter and motion which brings about this passage from the imperceptible, through the various stages of the perceptible, and back into the imperceptible, comprises two antagonistic processes: one characterised by the integration of matter and the dissipation of motion; the other by the absorption of motion and the disintegration of matter. The former produces consolidation and definiteness; the latter, diffusion and incoherence. These two universal antagonistic processes are evolution and dissolution. The entire universe is in a state of continual change, and it is in terms of these processes that all changes, great and small, inorganic, organic, physical, vital, psychical, social, have to be interpreted.

This brings us face to face with the whole question of the universal trans-

¹ *First Principles*, § 89.

Ibid., § 90.

³ *First Principles*, § 92.

formation of things, and of the ultimate uniformities which that transformation reveals. Our next business will be to understand what we mean by evolution.

IV.

What, then, is evolution?

A broad answer has already been given to this question. As dissolution is disintegration, so evolution is integration. But this definition takes note only of the primary element in the evolutionary process. While evolution must always mean an integration of matter and concomitant dissipation of motion, or, in other words, an increase in definiteness and coherence, it will commonly imply much more than this. We must, therefore, examine the secondary changes by which this primary change is habitually complicated before our theory of evolution can be complete. Indeed, these secondary changes are so much the most conspicuous characteristics of the evolutionary process that, as we shall see, it is from these that Spencer himself started, and with these that he remained for a long while pre-occupied. Our best plan will now be to follow him rapidly along the line of thought by which his full statement of the law of evolution was gradually reached. Points otherwise obscure will thus be robbed of much of their difficulty, and a good deal of subsequent elucidation will be spared.

We have noted that Spencer's earliest speculations were of a humanitarian character, and that his way of approach to the study of general evolution lay through that limited phase of development which we call progress. The theory of progress had been handed down to the thinkers of the nineteenth century by their forerunners of the eighteenth, and despite the absurdities

and extravagances that had long vitiated it—despite the vagueness and the crudity that it bore with it as an hereditary taint, the kernel of vital truth which it enfolded rendered it a fertile contribution to thought. Spencer's earliest writings are dominated by this idea of individual and social advance; but it was altogether foreign to his intellectual character to interest himself in the working out of a conception that was not at bottom susceptible of definite interpretation. It is all very well to talk about progress; but what *is* progress? This was the special form of the question to which for a number of years he was gradually feeling his way to an answer.

Already in *Social Statics* he had reached what then seemed to him an adequate reply. Asserting the necessity of progress (here metaphysically associated with a pre-ordained order),¹ he borrows from Coleridge the theory which Coleridge in turn had derived from German speculation, that life is "a tendency towards individuation." It is in the fulfilment of this tendency, says Spencer, that all progress will be found to consist. Throughout the whole animate world we discover it at work in the production of higher and higher forms of organisation and structure, and in man its fullest manifestation is reached. "By virtue of his complexity of structure he is furthest removed from the inorganic world in which there is least individuality. Again, his intelligence and adaptability commonly enable him to maintain life to old age—to

¹ This is one of the many points at which this remarkable book presents itself as a connecting link between eighteenth-century theories of progress, with their express or implicit teleology, and the purely naturalistic interpretation of Spencer's later work.

complete the cycle of his existence ; that is, to fill out the limits of this individuality to the full. Again, he is self-conscious ; that is, he recognises his own individuality. And.....even the change observable in human affairs is still towards a greater development of individuality—may still be described as ‘a tendency to individuation.’”¹

Translated into more philosophical language, this tendency to individuation is found to embrace two closely inter-related processes. Obviously, increasing complexity is one of these ; not so obviously, this increase of complexity must have increase of unity as its natural accompaniment. Universal specialisation, with its resulting advance in heterogeneity, is only possible if, while all things are becoming more and more characteristically marked off from one another, they are at the same time becoming gradually more and more interdependent. The line of growth is “at once towards complete separateness and complete union.”² Differentiation without concomitant unification would lead to chaos and confusion ; differentiation along with concomitant unification produces that enlargement of the organic harmony which we call progress.

This double aspect of the matter is clearly recognised in *Social Statics*,³ and was never entirely lost sight of in Spencer’s subsequent speculations.⁴ Yet, as was not unnatural, it was the more striking and conspicuous element in progress that for some time alone absorbed his attention. Allowing the

doctrine of unification to drop practically out of his thought, he fixed his mind upon the factor of increasing differentiation, which, detached from all other considerations, he attempted, in the essay on *Progress : Its Law and Cause*, to expand into a complete theory of universal development.

In this course he was materially assisted by German speculations on the evolution of the individual organism.¹ “The investigations of Wolff, Goethe, and Von Baer,” he writes in the early part of the just-named article, “have established the truth that the series of changes gone through during the development of a seed into a tree, or an ovum into an animal, constitute an advance from homogeneity of structure to heterogeneity of structure. In its primary stage every germ consists of a substance that is uniform throughout, both in texture and chemical composition. The first step is the appearance of a difference between two parts of this substance ; or, as the phenomenon is called in physiological language, a differentiation.....By endless such differentiations there is finally produced that complex combination of tissues and organs constituting the adult animal or plant. This is the history of all organisms whatever. It is settled beyond dispute that organic progress consists in a change from the homogeneous to the heterogeneous. Now, we propose.....to show that this law of organic progress is the law of all progress.....From the earliest traceable cosmical changes down to the latest results of civilisation, we shall find that the transformation of the homogeneous

¹ *Social Statics*, chap. xxx., § 12.

² *Ibid*, chap. xxx., § 13.

³ Chap. xxx., §§ 13, 14.

In the essays on the *Philosophy of Style* and the *Genesis of Science*, for example, the doctrine of increasing unification is clearly stated.

¹ These he became acquainted with in 1852—that is, after the publication of *Social Statics*. See *First Principles*, § 119, note.

into the heterogeneous is that in which progress essentially consists."

A full half of the essay in question is devoted to an inductive establishment of this thesis; the other half being taken up with the affiliation of this universal process upon the law of the multiplication of effects, to which we shall come directly. The statement set forth, therefore, is that evolution consists wholly in increase of complexity—is a change from a condition of homogeneity to a condition of heterogeneity, brought about by ever-increasing differentiations. So certain had Spencer now become that this was not only *a* law of evolution, but *the* law of evolution, that he incorporated the formula in the first edition of his *First Principles*.¹

Further thought, however, led him to see that this was an imperfect view of the case. An important truth, of which he had just caught a glimpse in *Social Statics*, had now to be reinstated in his plan. The mere change in the direction of increasing heterogeneity or complexity could not, as he came presently to realise, be held to constitute evolution, since there are many such changes which make, not for evolution, but for destruction. An injury to an organism renders that organism more multiform in its composition; a cancer in the system produces marked increase in heterogeneity; a revolution in the social state makes the state far less homogeneous;

but we look upon none of these changes as changes in the line of progress or evolution. On the contrary, we see at once that they tend in the opposite direction—in the direction of dissolution; for, let them go on long enough and far enough, and dissolution will be the inevitable result. It is clear, then, that we must seek for another law to condition this of progressive differentiation. When is it that the transformation from the homogeneous to the heterogeneous means evolution, and when is it that it means the reverse? The answer to this question will be found in a return to our half-realised but now partly-forgotten principle of unification. Add this to the previously-enunciated doctrine of increasing heterogeneity, and the complete formula is reached. The differentiation of an organism into many specialised parts is one requirement of the developmental process; the other requirement is seen to be fulfilled when, and only when, these various specialised parts become more and more interdependent. Along with advance towards increasing heterogeneity there must also be an advance towards completer organic unity. Apply this new statement of the law to the cases above referred to, and it will be seen immediately that the want before felt is now made good. A cancer in the system, a revolution in the state, while they increase the complexity, break up or jeopardise the unity, of organisation. Evolution, therefore, as we have before said, is always integration, as dissolution is disintegration.

Thus we have followed Spencer to the establishment of his world famous formula of evolution in its completed shape. Abstract and concise as it is in statement, it will now be found to present no insuperable difficulty, for we have

¹ "In that essay [on Progress].... as also in the first edition of this work, I fell into the error of supposing that the transformation of the homogeneous into the heterogeneous constitutes evolution; whereas.....it constitutes the secondary redistribution accompanying the primary redistribution in that evolution which we distinguish as compound—or rather.....it constitutes the most conspicuous part of this secondary redistribution" (*First Principles*, § 119, note).

reached it by a route that has made each part of it separately clear. Evolution, then, is to be defined as *a continuous change from indefinite incoherent homogeneity to definite coherent heterogeneity of structure and function, through successive differentiations and integrations.*¹

The world at large has a horror of abstract statements, and there is in the air a vague, but none the less influential, belief that because long and unfamiliar words are often used to disguise paucity of thought, paucity of thought must always be predicated where they are employed. It is not surprising, therefore, that many people are more inclined to ridicule this formula than to attempt to understand it; it is surprising only when we find men of philosophic cultivation following the same vulgar course. Professor Goldwin Smith it was, I believe, who years ago remarked that the universe must have heaved a sigh of relief when this explanation of her processes was given to an astonished world through the cerebration of a distinguished thinker. Perhaps we may be allowed to smile at the epigram without losing one particle of our faith in the doctrine which it is sometimes supposed to bring into disrepute. But of

all the efforts hitherto made to meet a great principle with the weapons of verbal wit, that of Mr. Kirkman, the well-known mathematician, holds an easy supremacy. Taking the formula as it stood in the edition of *First Principles* of 1862—the statement there given differing slightly from that adopted later—he undertakes to translate it “into plain English,” and the following jargon of uncouth phraseology is the result: “Evolution is a change from a nohowish, untalkaboutable, all-alikeness to a somehowish and in-general talkaboutable, not-all-alikeness, by continuous something-elseifications and sticktogetherations.” For myself, I can only say that I regret that Spencer ever saw fit to take this amusing exhibition of intellectual gymnastics seriously, as he did in the appendix to the fourth edition of *First Principles*. As a joke it is well enough; but a man who knows so little about the needs of language that he puts it forth in place of argument, and appears to think that he has thereby made short work of the principle that the formula embodies, is surely not worth powder and shot. Provided that Mr. Kirkman’s translation is absolutely accurate (which in one or two points may be taken as doubtful), and provided, further, that the English compounds which he offers in place of the Greek and Latin equivalents can be made to bear the same high degree of generality that the original words convey, then all that it is necessary to say is that the principle remains just as true in the one form of statement as in the other. Let Mr. Kirkman call heterogeneity “somethingelseification,” and integration “sticktogetheration,” if it pleases him best to do so; it none the less remains a fact that the double change towards diversity in unity is that in

¹ In a purely introductory volume like the present, I have thought it best to give this definition in the simplest form compatible with complete statement. In its most fully developed shape it runs: Evolution is an integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite incoherent homogeneity to a definite coherent heterogeneity; and during which the retained motion undergoes a parallel transformation (*First Principles*, § 145). Practically speaking, what we mainly have to keep in mind is that evolution is a double-sided process—multiformity in unity, or specialisation along with mutual dependence.

which all evolution will be found to consist. Translate the whole formula into Hottentot or Cherokee if you like; the truth for which it stands will not be made a whit less true.

V.

But with the formulation of this all-pervading process we reach only the starting-point of a fresh investigation. Philosophy—the complete unification of knowledge—demands the re-statement of the law of evolution in deductive form. Such being the transformation exhibited by all classes of concrete phenomena, we have to ask: Why this continuous metamorphosis? We have formulated the ultimate uniformities of that metamorphosis—the laws to which, as we symbolically say, it everywhere conforms. We must now seek the *rationale* of the universal changes inductively set forth—must undertake to interpret them as *necessary* consequences of some deeper law, in the same way as Kepler's empirical generalisations may be interpreted as necessary consequences of the law of gravitation.

In thus undertaking to present the phenomena of evolution in synthetic order, Spencer starts from the law of the instability of the homogeneous, itself a corollary from the persistence of force. The condition of homogeneity is a condition of unstable equilibrium, because in any finite homogeneous aggregate the different parts are unequally exposed to incident forces. Moreover, "every mass or part of a mass, on which a force falls, subdivides, and differentiates that force, which thereupon proceeds to work a variety of changes"; and while every cause thus produces more than one effect, with the result that complexity continually increases, and with con-

tinually-increasing rapidity, the process of segregation, "tending ever to subdivide unlike units and to bring together like units," serves at the same time "to sharpen or make definite differentiations otherwise caused." Thus we have three comprehensive laws—the instability of the homogeneous, the multiplication of effects, and segregation—by which to account for the continual changes which we call evolution; we now see not only that these universal changes do take place, but also why they must take place. Nor is this all. These three laws are in turn exhibited as deductions from the deepest of all truths—as inevitable results of the persistence of force under the forms of matter and motion. In this way the circle of induction and deduction is made complete.

While the foregoing outline has had for its main purpose the exposition of the fundamental principles of the *Synthetic Philosophy*, it should also have helped, as we anticipated that it would, to make clear the method pursued by Spencer in the working out of his system. But as this is a point upon which we cannot well be too explicit, I shall complete this survey by following his own account (given to me in a letter after the publication of the first edition of this little book) of the course of thought by which he was led to the formulation of the ideas above summarised. This will, indeed, involve some little repetition, but not enough, considering the somewhat abstruse nature of the subject, to give cause for regret.

The simple nucleus of his philosophic system, he told me, first made its appearance in *Social Statics*, where, in the chapter entitled "General Considerations," mention is made of the biological truth that low types of animals are

relatively homogeneous—are composed of many like parts not mutually dependent ; while higher animals are relatively heterogeneous—are composed of parts that are unlike and are mutually dependent. This, he wrote, “was an induction which I had reached in the course of biological studies—mainly, I fancy, while attending Professor Owen’s lectures on the vertebrate skeleton.” With this was joined the statement that the same is true of societies, “which begin with many like parts not mutually dependent, and end with many unlike parts that are mutually dependent.” This, again, was an induction. “And then in the joining of these came the induction that the individual organism and the social organism followed this law.” Thus the radical conception of the entire system took shape before Spencer became acquainted with Von Baer’s law, which, as we have seen, did not occur till two years later. Yet this law, though applying to the unfolding of the individual organism only, had its use. In furnishing the expression, “from homogeneity to heterogeneity,” it presented a convenient intellectual implement, for, “by its brevity and its applicability to all orders of phenomena, it served for thinking much better than the preceding generalisation, which contained the same essential thought.” The essays which followed *Social Statics* were marked by the establishment of various separate inductions, in which other groups of phenomena were brought under this large principle ; while in the first edition of the *Psychology* not only was this principle shown to comprehend mental phenomena, but there was also recognised the primary law of evolution—integration and increase in definiteness. What followed may best be given in Spencer’s own words :—

Then it was that there suddenly arose in me the conception that the law which I had separately recognised in various groups of phenomena was a universal law applying to the whole cosmos : the many small inductions were merged in the large induction. And only after this largest induction had been formed did there arise the question—Why? Only then did I see that the universal cause for the universal transformations was the multiplication of effects, and that they might be deduced from the law of the multiplication of effects. The same thing happened at later stages. The generalisation which immediately preceded the publication of the essay on *Progress : Its Law and Cause*—the instability of the homogeneous—was also an induction. So was the direction of motion and the rhythm of motion. Then, having arrived at these derivative causes of the universal transformation, it presently dawned upon me (in consequence of the recent promulgation of the doctrine of the conservation of force) that all these derivative causes were sequences from that universal cause. The question had, I believe, arisen—Why these several derivative laws? and that came as an answer. Only then did there arise the idea of developing the whole of the universal transformation from the persistence of force. So you see that the process began by being inductive, and ended by being deductive ; and this is the peculiarity of the method followed. On the one hand, I was never content with any truth remaining in the inductive form. On the other hand, I was never content with allowing a deductive interpretation to go unverified by reference to the facts.

The body of philosophy wrought by this two-fold method into a firmly-knit logical whole may thus be described as a science of the sciences, and is properly called Synthetic.¹

VI.

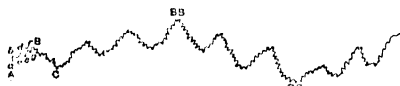
One supremely important point must here be noted, to prevent possible misapprehensions.

It is a common error to suppose that

¹ The work was originally announced simply as *A System of Philosophy*. The distinctive title was adopted in 1867.

evolution is continuous and uninterrupted—that its course may be symbolised by a straight line. A wavy line would, roughly speaking, be its more correct expression. An immediate corollary from Spencer's first principle of the persistence of force is, as we have seen, the law of the rhythm of motion. Were there only a single body in space, a single force would impel that body at a uniform rate to all eternity along an undeviating course; but in that case no variety would ever arise, and no evolution would be possible. As it is, the processes of evolution and dissolution are continually in conflict, locally and generally; and since throughout the whole universe motion is rhythmical or undulatory, evolution necessarily implies dissolution. This is true of all phenomena, from the minutest changes cognisable by science to the latest transformation of societies studied by the economist and the historian.¹

¹ Diagrammatically, making allowance for the rhythm of all motion and the consequent alternation of evolution and dissolution (progress and retrogression), the history of the universe in general and detail may be approximately presented in this way :—



it being understood that, while each of the smallest lines is supposed itself to be made up of undulations and so on in a diminishing scale, the whole diagram as here given is likewise only a limb of a larger rhythm, and this again of a still larger rhythm, *ad infinitum*. In other words, as the minute undulations, *a, b, c, d, e, f, g, etc.*, are components of the larger undulations *A, B, C, etc.*, and these again of the still larger undulations *AA, BB, CC, etc.*, these still larger undulations *AA, BB, CC, etc.* themselves go to make up vaster sweeps of rhythm, and so forth, to any

Evolution, then, as we have always to bear in mind, does not sum up the entire history of the universe, but only its ascending history. All existence passes through a cycle of change, and sooner or later dissolution asserts itself to undo the work that evolution has done. Individuals die, organisms disintegrate, societies collapse, races and civilisations are extinguished; and in the life and death of a gnat we thus find a tiny symbol of the pulsations that produce the birth and decay of worlds. Thus we have throughout to recognise the ascending and the descending scale, and to understand that the one is the necessary complement of the other. The flood of new light that this consideration lets in upon the problems of psychology and sociology is only now just beginning to be appreciated;² but the mind staggers before its

extent. All this reminds us of De Morgan's verses :—

"Great fleas have little fleas upon their backs
to bite 'em,
And little fleas have lesser fleas, and so *ad
infinitum* ;
And the great fleas themselves, in turn, have
greater fleas to go on,
And these again have greater still, and greater
still, and so on."

² The law of rhythm, when once fully recognised by the student of human affairs, will introduce important changes into the philosophy of history. In other practical directions its influence promises to be at least as significant. Dealing with various illustrations of it, as furnished by individual and social life, Spencer wrote : "Nor are there wanting evidences of mental undulations greater in length than any of these [which he had just been considering]—undulations which take weeks, or months, or years, to complete themselves. We continually hear of moods which recur at intervals. Very many persons have their epochs of vivacity and depression. There are periods of industry following periods of idleness, and times at which particular subjects or tastes are cultivated with zeal,

larger possible implications. If the doctrine of rhythm—of the alternation of evolution and dissolution—holds good of every detail of the universe, it must hold good no less of the universe taken as a whole. We pause a moment upon the conception of eternal change—eternal in the past, eternal in the future—to which this doctrine unavoidably leads. “Apparently the universally-co-existent forces of attraction and repulsion, which, as we have seen, necessitate rhythm in all minor changes throughout the universe, also necessitate rhythm in the totality of its changes—produce now an immeasurable period during which the attractive forces, predominating, cause universal concentration, and then an immeasurable period during which

the repulsive forces, predominating, cause universal diffusion—alternate eras of evolution and dissolution. And thus there is suggested the conception of a past during which there have been successive evolutions analogous to that which is now going on; and a future during which successive other such evolutions may go on—ever the same in principle, but never the same in concrete result.”

VII.

We may supplement this brief survey of some of the main doctrines of *First Principles* by the following summary of his philosophy which Spencer himself drew up a number of years ago for publication in Appleton's *American Cyclopædia*, and which is here reproduced from that work:—

alternating with times at which they are neglected.

Respecting which slow oscillations, the only qualification to be made is that, being affected by numerous influences, they are comparatively irregular” (*First Principles*, § 86). The following striking passage from Dr. O. W. Holmes's *Over the Teacups* (chap. viii.) reads almost like a commentary upon the one just given: “I think if patients and physicians were in the habit of recognising the fact I am going to mention, both would be gainers. It is a mistake to suppose that the normal course of health is represented by a straight horizontal line. Independently of the well-known causes which raise or depress the standard of vitality, there seems to be—I think I may venture to say there is—a rhythmic undulation in the flow of the vital force. The ‘dynamo’ which furnishes the working powers of consciousness and action has its annual, its monthly, its diurnal waves—even its momentary ripples—in the current it furnishes. There are greater and lesser curves in the movement of every day's life—a series of ascending and descending movements; a periodicity depending on the very nature of the force at work in the living organism. Thus we have our good seasons and our bad seasons, our good days and our bad days, life climbing and descending in long or short undulations, which I have called the curve of health.”

1. Throughout the universe, in general and in detail, there is an unceasing redistribution of matter and motion.

2. This redistribution constitutes evolution where there is a predominant integration of matter and dissipation of motion, and constitutes dissolution where there is a predominant absorption of motion and disintegration of matter.

3. Evolution is simple when the process of integration, or the formation of a coherent aggregate, proceeds uncomplicated by other processes.

4. Evolution is compound when along with this primary change from an incoherent to a coherent state there go on secondary changes, due to differences in the circumstances of the different parts of the aggregate.

5. These secondary changes constitute a transformation of the homogeneous into the heterogeneous—a transformation which, like the first, is exhibited in the universe as a whole and in all (or nearly all) its details—in the aggregate of stars and nebulae; in the planetary system; in the earth as an inorganic mass; in each organism, vegetal or animal (Von Baer's law); in the aggregate of organisms throughout geologic

time ; in the mind ; in society ; in all products of social activity.

* 6. The process of integration, acting locally as well as generally, combines with the process of differentiation to render this change, not simply from homogeneity to heterogeneity, but from an indefinite homogeneity to a definite heterogeneity ; and this trait of increasing definiteness, which accompanies the trait of increasing heterogeneity, is, like it, exhibited in the totality of things, and in all its divisions and subdivisions down to the minutest.

7. Along with this redistribution of the matter composing any evolving aggregate there goes on a redistribution of the retained motion of its components in relation to one another ; this also becomes, step by step, more definitely heterogeneous.

8. In the absence of a homogeneity that is infinite and absolute, this redistribution, of which evolution is one phase, is inevitable. The causes which necessitate it are :

9. The instability of the homogeneous, which is consequent upon the different exposures of the different parts of any limited aggregate to incident forces. The transformations hence resulting are complicated by -

10. The multiplication of effects : every mass and part of a mass on which a force falls subdivides and differentiates that force, which thereupon proceeds to work a variety of changes ; and each of these becomes the parent of similarly multiplying changes : the multiplication of these becoming greater in proportion as the aggregate becomes more heterogeneous. And these two causes of increasing differentiations are furthered by -

11. Segregation, which is a process tending ever to separate unlike units, and to bring together like units, so serving continually to sharpen or make definite differentiations otherwise caused.

12. Equilibration is the final result of these transformations which an evolving aggregate undergoes. The changes go on until there is reached an equilibrium between the forces which all parts of the aggregate are exposed to, and the forces these parts oppose to them. Equilibration may pass through a transition stage of balanced motions (as in a planetary system), or of balanced functions (as in a living body), on the way to ultimate equilibrium ; but the state of rest in inorganic bodies, or death in organic bodies, is the necessary limit of the changes constituting evolution.

13. Dissolution is the counterchange which sooner or later every evolved aggregate undergoes. Remaining exposed to surrounding forces that are unequibrated, each aggregate is ever liable to be dissipated by the increase, gradual or sudden, of its contained motion ; and its dissipation, quickly undergone by bodies lately animate, and slowly undergone by inanimate masses, remains to be undergone at an indefinitely remote period by each planetary and stellar mass, which, since an indefinitely remote period in the past, has been slowly evolving : the cycle of its transformations being thus completed.

14. This rhythm of evolution and dissolution, completing itself during short periods in small aggregates, and in the vast aggregates distributed through space completing itself in periods which are immeasurable by human thought, is, so far as we can see, universal and eternal : each alternating phase of the process predominating—now in this region of space, and now in that—as local conditions determine.

15. All these phenomena, from their great features down to their minutest details, are necessary results of the persistence of force under its forms of matter and motion. Given these in their known distributions through space, and their quantities being unchangeable, either by increase or decrease, there inevitably result the continuous redistributions distinguishable as evolution and dissolution, as well as all those special traits above enumerated.

16. That which persists, unchanging in quantity, but ever-changing in form, under these sensible appearances which the universe presents to us, transcends human knowledge and conception ; is an unknown and an unknowable power, which we are obliged to recognise as without limit in space, and without beginning or end in time.

VIII.

The whole body of philosophy, or completely-unified knowledge, Spencer divides into two parts : "On the one hand, the things contemplated may be the universal truths : all particular truths referred to being used simply for proof or elucidation of these universal truths.

On the other hand, setting out with the universal truths as granted, the things contemplated may be the particular truths as interpreted by them. In both cases we deal with the universal truths; but in the one case they are passive, and in the other case active—in the one case they form the products of exploration, and in the other case the instruments of exploration. These divisions we may appropriately call General Philosophy and Special Philosophy respectively.¹ General Philosophy forms the subject-matter of *First Principles*; the remaining nine volumes of the Synthetic series are devoted to the task of applying the universal truths there formulated to the particular phenomena of Biology, Psychology, Sociology, and Ethics.

Some of the most striking features of Spencer's treatment of the two last-named subjects will be dealt with in the following chapters—their more obviously practical bearings justifying this special consideration. The rest of the present chapter will be devoted to the earlier portions of the work.

The aim of the *Principles of Biology* was, as Spencer himself stated in the preface, "to set forth the general truths of biology as illustrative of and as interpreted by the laws of evolution." Due notice must be taken of the phrase—"the general truths of biology." To write an exhaustive treatise on the subject was no part of Spencer's plan, which called only for such a co-ordination and synthesis of fundamental principles as, expressed in terms of the universal laws of evolution, and finally affiliated upon the ultimate truth, would present in broadest outline the science of life. Students of these two volumes

have also need to bear in mind that they were published at a time when the whole question of evolution was still under fierce discussion, and when even the scientific world itself was divided into hostile camps over every issue involved. Hence the special historic significance, over and above the general philosophic significance, of Part III., setting forth the arguments in favour of the development-hypothesis, and dealing with the factors of organic evolution. Beyond this, little needs to be said by way of introduction to the work. Attention may, however, be directed to the law of equilibration, and some of its more significant bearings.¹

Life being defined as "the continuous adjustment of internal relations to external relations," Spencer proceeds to show that the degree of life varies as the correspondence varies between organism and environment; the highest point being reached where the correspondence exhibits a maximum of complexity, rapidity, and length of maintenance. Lack of correspondence—that is, inability on the part of an organism to balance external actions by internal actions, or, in other words, to meet the demands of the environment at every point—means death; absolutely perfect adjustment, on the other hand, would be absolutely perfect life. Observe, then, that equilibration, biologically considered, expresses the tendency on the

¹ The general law is worked out in full in *First Principles*, Part II., chap. xxii. The question is there raised—Can the changes constituting evolution go on without limit? And the answer is, No. "The changes go on until there is reached an equilibrium between the forces which all parts of the aggregate are exposed to, and the forces these parts oppose to them." Hence, in all cases, "there is a progress toward equilibrium."

¹ *First Principles*, § 38.

part of an organism to adjust itself more and more completely to an environment which, it must be remembered, is itself in a state of perpetual change. Now, such equilibration may be direct or indirect. It is direct when the organism responds immediately to the demands of its surroundings. It is indirect where variations which are in the line of greater correspondence are gathered up, because they favour continuance of life, and transmitted to following generations. When these statements are looked at closely, a very interesting fact comes to light. While investigating the law of equilibration, we have at the same time been formulating the factors of organic evolution. For, clearly, the doctrine of direct equilibration is the doctrine, specially associated with the name of Lamarck, that changes in structure are brought about by those changes in function which are produced by the conditions of life; while the doctrine of indirect equilibration is simply Darwin's great doctrine of natural selection, or the survival of the fittest in the struggle for existence.

Nor is this all. By virtue of the light which the law of equilibration throws upon the vexed question of population, and, therefore, in turn, upon the whole problem of the future of the human race, it has also an immediate practical interest.

This problem, with its intimate connection with the facts of animal fertility, began seriously to engage the attention of thinkers towards the close of the eighteenth century. One remarkable outgrowth of the generous ardour and enthusiasm which accompanied the earlier developments of the French Revolution was the strong belief in human perfectibility which suddenly took pos-

session of some of the finest minds of the age. It seemed only necessary to throw off the numerous political and social shackles of the past, to get rid of the tyrannies of kingcraft and priestcraft and aristocracies, and to break the fetters of degrading forms and customs that had been handed down from the past; it seemed only necessary, in a word, to give men and women free play, and the brightest dreams of poet and seer would turn forthwith into still brighter realities. Something of the intense thrill of this great new hope we can catch in the earlier books of Wordsworth's *Prelude*; as in the later books we come into immediate touch with that numbing sense of disappointment and despair which settled down over the consciousness of the world when it was realised that France had indeed failed to make good the magnificent promises of 1789. We know how that practical failure brought the whole doctrine of human progress for a time into disrepute: such a work as Chateaubriand's *Essai sur les Révolutions Anciennes et Modernes* being simply one indication of a widespread reaction in thought. Meanwhile, expressive as it may now well seem to us to be of this sad change from sanguine expectation to doubt and despondency, appeared in 1798 the first edition of one of the world's epoch-making books—Malthus's *Essay on the Principle of Population*.¹ The central doctrine of

¹ "There is nothing new but what has been forgotten," says a clever French paradox. For the sake of those interested in what Buckle called the "paternity of ideas," it may be pointed out that, original as the work of Malthus seemed to be, he was not without predecessors in his own chosen field. One Townsend, in an account of a journey through Spain, had already broached the problem of the relation of human population to the means of support; and even

that book—the work, strangely enough, of an English clergyman of the Established Church—struck a deadly blow at the gorgeous speculations of humanitarian dreamers. The earthly Eden which men had declared to be at hand was now pronounced an impossibility. For Malthus showed conclusively, as it seemed to himself and to many others of his and later times, that the world is and always must be over-populated, and that the pressure of humanity upon the means of subsistence is not an accident, but a necessity. If, therefore, it is inevitable that human beings should increase much more rapidly than their sustenance, misery in one form or the other is a necessary accompaniment of human life; and wholesale death by mere starvation is only prevented by the operation of other factors which have hitherto combined to prevent population from running too far in advance of its material of support. Let progressive civilisation interfere with these factors, as it constantly tends to do—let it decrease wars, plagues, excessive and premature mortality, vices of various kinds, and enforced or voluntary celibacy—and upon the removal of these hitherto stringent preventive checks a universal battle for life would ensue. Hence it is useless to indulge in lyric enthusiasms about the reign of plenty and the kingdom of peace and love upon earth. The reign of plenty is a myth, the kingdom of peace and love an airy fiction. To all such gorgeous visions a death-blow was given by the revelation of an ever-

he had a precursor in that great writer who foreshadowed so many peculiarly modern ideas—Voltaire. (See the article "Population" in his *Dictionnaire Philosophique*.) The subject had also been touched by Hume and Benjamin Franklin.

lasting and inevitable want of balance between human population and its means of support.¹

Malthus's book came upon the world with the blight of disillusion. Its conclusions were widely accepted; its theories passed into the economist's recognised body of thought; the optimism which had characterised eighteenth-century thought was at an end.²

Remembering this, we are in a position to appreciate the importance of Spencer's own contribution to the subject. A profound investigation of the whole question of multiplication, asexual and sexual, sub-human and human, leads him to the conclusion, established as usual inductively and deductively, that, while excess of fertility has been and continues to be the cause of evolution, every fresh step in that evolution itself necessitates, in its turn, a decline in fertility. That human population will forever continue to press upon the means of human subsistence, as Malthus supposed, is therefore not a

¹How pregnant were Malthus's speculations is shown by the fact that it is in this essay of his that we find the starting-point of Darwin's own development of thought—the development which presently culminated in the *Origin of Species*. Given this universal over-population, and it is clear that wholesale destruction must be all the time at work. As animals and plants are thus perpetually tending to increase faster than their means of sustenance, a struggle among them must result; and in this struggle those individuals of every species are likely to conquer and survive which are equipped for the conflict by even the most minute variations favouring them in gaining food and avoiding enemies. (See Darwin's own introduction to the sixth edition of the *Origin of Species*.)

²It must not be forgotten that the *Essay* was inspired by Godwin's writings, and was thus immediately directed against the current Utopianism. For its effect on the feeling of the time, see the Preface to Shelley's anti-reactionary poem, *The Revolt of Islam*.

fact. Individuation and reproduction are in necessary antagonism ; advance in the former must be followed by decrease in the latter ; and a gradual approach will thus be made towards an equilibrium "between the number of new individuals produced and the number which survive and propagate."¹ Fecundity is thus not a permanent factor, as is implied in the Malthusian view ; and pressure of population and its accompanying evils, instead of remaining the one problem to be encountered all along the line of human progress, must gradually work itself out altogether :—

The excess of fertility has itself rendered the process of civilisation inevitable ; and the process of civilisation must inevitably diminish fertility, and, at last destroy its excess. From the beginning pressure of population has been the proximate cause of progress. It produced the original diffusion of the race. It compelled men to abandon predatory habits and take to agriculture. It led to the clearing of the earth's surface. It forced men into the social state ; made social organisation inevitable ; and has developed the social sentiments. It has stimulated to progressive improvements in production and to increased skill and intelligence. It is daily thrusting us into closer contact and more mutually dependent relationships. And, after having caused, as it ultimately must, the due peopling of the globe, and the raising of all its habitable parts into the highest state of culture—after having brought all processes for the satisfaction of human wants to perfection—after having, at the same time, developed the intellect into complete competency for its work, and the feelings into complete fitness for social life—after having done all this, the pressure of population, as it gradually finishes its work, must gradually bring itself to an end.²

Thus the curse pronounced by Malthus is stripped of its terror, and a way of return is opened to the older faith in the progress of mankind. And

it may be noted in passing that this faculty for discovering the soul of goodness in things which, superficially viewed, seem entirely evil is highly characteristic of Spencer's whole course of thought. The doctrine of evolution—so depressing to many, and, within recent years, so often used as the basis of a pessimistic philosophy—is by him habitually interpreted upon the optimistic side. By its aid, again and again, in Emerson's picturesque phrase, he has converted "the Furies into Muses and the hells into benefit."

IX.

Many competent critics have regarded the *Principles of Psychology* as Spencer's greatest achievement, and not, perhaps, without good cause. Nowhere else, certainly, could we find a more striking exhibition of his magnificent powers of both analysis and synthesis, of his clear perception of the significance of the minutest details, of his daring sweep of generalisation and deduction, of his firm control over the longest and most intricate chains of reasoning. To the phenomena of no other subject, it may be added, have evolutionary principles been applied with more conspicuous results.

The old psychology had been purely statical. Its subject-matter had been the manifestations of intelligence in the modern civilised adult ; and a hard-and-fast line had been drawn between these and all the manifestations of intelligence exhibited by the subhuman world. Mind in man was held to differ absolutely and generically from mind in animals ; and no study of the latter could be resorted to in the hope of throwing light upon the problems of the former. The foolish antithesis of instinct and reason is a sturdy survival of this old thought.

¹ *Principles of Biology*, § 377. ² *Ibid*, § 376.

This traditional course, followed unquestioningly from generation to generation, and by school after school of metaphysicians, had naturally carried the subject of psychology but little beyond the point reached by the fantastic speculations of mediæval scholasticism. Evolution offered the student an entirely new standpoint. Its great principle of the continuity of all phenomena, applied to the problems of intelligence, showed that all absolute distinctions, here as elsewhere, are mere subjective illusions. Between mind in its highest development and mind in its first dim awaking no boundary can anywhere be set; and the complex intellect of the modern adult, so far from being treated as a thing unique and apart, has thus henceforth to be regarded as the production of the compounding and recompounding of simpler and still simpler elements. Mind is to be understood only in the light of its evolution.

As in the *Principles of Biology*, then, the general truths of life were interpreted through the fundamental laws of evolution, so in the *Principles of Psychology* the facts and problems of mind are elucidated in the same way. Given the nervous shock,¹ which Spencer distin-

guishes as the primordial and unresolvable element, or ultimate unit, of consciousness, the business of scientific psychology is to follow the process of progressive integration and differentiation, step by step, from reflex action, through sensation, instinct, memory, reason, the feelings, and the will, relating their progressive changes at every point with corresponding changes in the nervous system. But more than this: the principle of continuity further warns us against any attempt to fix a barrier between physiological and psychological phenomena. The manifestations of physical and mental activity have also their unity of composition, for the life of the body and mental life are species, of which life, properly so called, is the genus.

Though we commonly regard mental and bodily life as distinct, it needs only to ascend somewhat above the ordinary point of view to see that they are but subdivisions of life in general, and that no line of demarcation can be drawn between them otherwise than arbitrarily. Doubtless, to those who persist after the popular fashion in contemplating only the extreme forms of the two, this assertion will appear as incredible as the assertion that a tree arises by imperceptible changes out of a seed, would appear to one who had seen none of the intermediate stages.....[But] it is not more certain that, from the simple reflex action by which the infant sucks, up to the elaborate reasoning of the adult man, the progress is by daily infinitesimal steps, than it is certain that between the automatic actions of the lowest creatures and the

¹ Such is the word employed by Spencer, but he strictly means *psychical* shock. Anxious as he was throughout his argument to keep the psychical phenomena distinct from their physical accompaniments, it is a little curious that he should have slipped into such an unfortunate use of the word "nervous"—a word that threatens to blur the whole issue. When, by the severest analysis, we have followed psychical action down to its faint dawn in a simple response to the stimulus of the environment, we are no nearer than we were at the opening of the inquiry to a comprehension of the passage from nervous action to psychical action; that passage still remains, as Tyndall said, unthinkable. We have not explained how sensation arises; we do

not know how it is possible. And thus, as psychological analysis carries us no further than the psychical shock, it is with this, and not with the physical side of the double process, that synthesis must begin. (See on this point the very interesting note on p. 444 of vol. ii. of Fiske's *Cosmic Philosophy*. Mr. Fiske ventured to change "nervous" to "psychical," and adds that Spencer authorised him to say that in so doing he had his concurrence.)

highest conscious actions of the human race a series of actions displayed by the various tribes of the animal kingdom may be so placed as to render it impossible to say of any one step in the series, Here intelligence begins.¹

The method of investigation that evolution has thus rendered possible has achieved, along with many other splendid triumphs, one very notable success. It has effected a permanent compromise between two great antagonistic schools of psychology—the experimentalist and the transcendentalist, or the followers of Locke on the other hand and those of Leibnitz and Kant on the other. This famous dispute, which antedated by centuries the celebrated philosophers with whose names it is now generally associated, and which, before the rise of the doctrine of evolution, promised to be perennial, concerned the nature of the human faculty. “All our knowledge is derived from experience” was the fundamental dictum of the empiricists. “On the contrary,” replied their opponents, “we possess ideas which transcend experience—which are innate.” Spencer, approaching the whole question from the evolutionary side, saw that the controversy from first to last was a controversy of partial views. The weakness of each system was that it accepted a portion of the truth for the entire truth. To say that, antecedent to experience, the mind is an absolute blank is, as he pointed out, to ignore the essential questions, “Whence comes the power of organising experiences? whence arise the different degrees of that power possessed by different races of organisms and different individuals of the same race?”² But is this to throw up the empirical case altogether? Not at all. The pre-estab-

lished internal relations of the innateness of which so much is made by the idealists, if transcendent to the experiences of the individual, are not transcendent to that vast chain of ancestral experience, running back through ages of barbarism and animality to the lowest beginnings of life, of which the present individual is only the terminal link. The moment the *venue* of discussion was changed from the limited area of individual experience to the immeasurable area of universal experience the ancient difficulty vanished. What the transcendentalist called *à priori* principles the evolutionist regards as *à priori* indeed to the individual, but *à posteriori* to the race; that is, as race experiences which in the individual appear as intuitions. We need no longer quarrel, therefore, over the so-called “forms of thought,” and the question of relative potential intellectuality becomes clear. Of a surety the doctrine of evolution is a great moderator of philosophic discords, and, since it is notorious that philosophic discords have been almost as fierce and obstinate as controversies in the theological arena, it should receive a generous meed of the blessing promised to peacemakers.

A word of warning must be added ere we close these few paragraphs on the Spencerian psychology.

A superficial reading of what has just been written concerning the continuity of phenomena, and the impossibility of drawing any dividing line between physical and psychical life, might only too easily lead the unwary student to conclude that Spencer's doctrines end in materialism pure and simple. This, indeed, is the popular view of the matter, held to with stolid tenacity despite continual protest and repeated disproof. Yet on no point did Spencer endeavour

¹ *Principles of Psychology* (first edition).

² *Principles of Psychology*, § 208.

to make himself more explicit. Already in the concluding paragraphs of *First Principles* he had done his utmost to show that the arguments contained in that work lend no support whatever to either of the current antagonistic views respecting the ultimate nature of things. "Their implications are no more materialistic than they are spiritualistic; and no more spiritualistic than they are materialistic," he there asserted; since our antithetic conceptions of spirit and matter, necessary as they must seem to us, are still nothing more than symbols of the Unknown Reality which underlies both. Developing this truth more fully in the *Principles of Psychology*, he thus declared himself in the chapter on "The Substance of Mind" (§ 63):—

Here.....we arrive at the corner which needs to be perpetually pointed out, alike to those who seek materialistic explanations of mental phenomena and to those who are alarmed lest such explanations may be found. This last class prove by their fear, almost as much as the first prove by their hope, that they believe Mind may possibly be interpreted in terms of Matter; whereas many whom they vituperate as materialists are profoundly convinced that there is not the remotest possibility of so interpreting them. For those who, not deterred by foregone conclusions, have pushed their analysis to the uttermost see very clearly that the concept we form to ourselves of Matter is but the symbol of some form of power absolutely and forever unknown to us; and a symbol which we cannot suppose to be like the reality without involving ourselves in contradictions (*First Principles*, § 16). They also see that the representation of all objective activities in terms of Motion is but a representation of them, and not a knowledge of them; and that we are immediately brought to alternative absurdities if we assume the Power manifested to us as Motion to be in itself that which we conceive as Motion (*First Principles*, § 17). When with these conclusions, that Matter and Motion as we think them, are but symbolic of unknowable forms of existence, we join the conclusion lately reached that Mind also is unknowable, and

that the simplest form under which we can think of its substance is but a symbol of something that can never be rendered into thought; we see that the whole question is at last nothing more than the question whether these symbols should be expressed in terms of those or those in terms of these—a question scarcely worth deciding, since either answer leaves us as completely outside of the reality as we were at first.

The battle of Spiritualism and Materialism is, therefore, a battle merely of symbols and of words.

How thoroughly unmaterialistic is Spencer's whole view of the question is made manifest by the paragraph immediately following the one from which the above extract is taken. Here he distinctly says, once and for all, "that were we compelled to choose between the alternatives of translating mental phenomena into physical phenomena, or of translating physical phenomena into mental phenomena, the latter alternative would seem the more acceptable of the two." He proceeds to give, in the course of a long paragraph which well deserves the closest attention, his reasons for this assertion; and concluding that "of the two it seems easier to translate so-called Matter into so-called Spirit than to translate so-called Spirit into so-called Matter (which latter is, indeed, wholly impossible)," he again reminds us that, after all, "no translation can carry us beyond our symbols." After this, only the familiar ignorance, carelessness, and perversity of the general religious world can explain the fact that even to-day Spencer's teachings are frequently denounced as "materialistic." It is surprising how often the shortsightedness of the theologians has led them to treat with antagonism men who, if they only knew it, should rather be reckoned among the truest friends of religion.

CHAPTER IV.

THE SPENCERIAN SOCIOLOGY

I.

SPENCER's social and political teachings are familiar enough in their main outlines to readers who otherwise know little or nothing of his works. The most popularly written and widely circulated of his books—the *Education* alone excepted—are those which deal directly with the problems arising from the relations of citizens to government and to one another. In the pages of *Social Statics*, *The Study of Sociology*, and *The Man versus The State*, these problems in their multifarious aspects are handled with extraordinary force, clearness, and felicity of illustration; and, though first principles are kept in view throughout, and are shown to constitute the firm foundation of every doctrine advanced—though in this way philosophic coherence and consistency are given to every chain of reasoning—the popular standpoint is that adopted; the arguments are directed rather to the general reader than to the special student. By the larger public, therefore, the individualistic principles which form the core of all his political teachings are accepted or rejected without any thought of their relation to his philosophic system as a whole; how they fall into the body of his work, and what exact place they occupy there, are questions that seldom come up for consideration.

This is the more natural because, even when we have grown tired, as Zschokke put it, of "living in the furnished lodgings of tradition," very few of us

have thought out for ourselves a systematised theory of life. We have what we are pleased to call our ideas (usually more correctly to be described as our feelings) about most things; and the less we understand of a subject the stronger our assertions of opinion are likely to be. But these ideas rarely hang together among themselves—are rarely attached to any deep underlying principles. Their roots run down into the emotions; they draw their nourishment thence; and some accident of early education, environment, self-interest, or class-bias, gives them, unknown to ourselves, their special form and colour. It is curious in studying our friends—we are less likely to observe such inconsistencies in ourselves—to find, in consequence, what a strange jumble of contradictory notions the majority of them manage to find room for, without for a moment seeming to imperil thereby their self-satisfaction or peace of mind. The assertive radical, brought face to face with some novel form of an old question, unexpectedly develops a rabid conservatism: the bigoted conservative advocates on some special isolated point doctrines which, applied to other and perhaps more familiar issues, he would look upon with horror. Men who are urging the world forward in one direction are holding it back in others; and the gospels of yesterday and to-morrow are proclaimed in one breath by the same preacher. Few realise the absurdity of all this; few

are aware of the anarchy of thought and incongruity of social aims to which it must inevitably give rise; fewer still, perhaps, understand that it is due to the absence in most men—even in those of general intelligence and more than average culture—of a methodical habit of mind, and the guiding power of some great central principles, to the touchstone of which every judgment and opinion may be brought.

Caring nothing for the coherence of their own ideas, most readers naturally fail to inquire into the coherence of the ideas of other people. Hence they are willing to deal with that one department of the Spencerian thought which happens to come under their particular notice without troubling to raise the question of its connection with other departments. Spencer's individualism may or may not organically belong to and of necessity grow out of the principles of evolution as expounded by him; but, while they will discuss the individualism itself, this is the last matter that is likely to detain them. Hence it is precisely this point we propose to deal with here. To expound Spencer's social and political views in their practical applications would, considering how frequently and in what popular language he himself set them forth, be a work of supererogation; to discuss them would lie outside the scope of our plan. But to show how these views are affiliated upon the main body of his thought will be to carry out to the full the design of this introduction.¹

¹ There is the more need to do this, first, because many otherwise loyal adherents of Spencerianism have refused to follow their teacher into the extremes of his political thought; and, secondly, because of the opinion, widely diffused among them, that his social doctrines, espoused long

II.

The once famous saying of Sir James Mackintosh, that "constitutions are not made, but grow," struck the men of his time as singularly original and suggestive; which will not surprise us when we remember the purely mechanical theories of social history which had stood unchallenged during the eighteenth century, and were still current when he wrote. But, as Spencer says, "in our day the most significant thing" about it is "that it was ever thought so significant." Not only has the principle enunciated in it long since passed into a commonplace, but from the evolutionary standpoint we all now see that it forms but a small portion of a much larger truth. Under all its aspects and through all its ramifications society itself is the result of slow and natural development, not of artificial contrivance—a growth and not a manufacture. This means that it must be dealt with not as a mechanism, but as a living thing.

The comparison between society and an individual organism had been instituted before Spencer's time, but in a way too vague for it to be productive of much result. Spencer, in taking the matter up among his earlier studies, endeavoured to do something more than point out more or less fanciful analogies. Utilising the comprehensive generalisations of modern biology, he undertook to indicate the real parallelisms.²

before the working out of his general system, have since been cleverly dovetailed into that system, and form no proper part of it. As this whole subject is a vast and complicated one for brief treatment, I may be perhaps allowed to record that Spencer himself expressed entire satisfaction with my analysis of his arguments and conclusions.

² These parallelisms, outlined in the article

These are four in number, and may be summarised in succinct statement thus:—

1. Commencing as small aggregations, both societies and individual organisms insensibly augment in mass, in some instances eventually reaching a bulk ten thousand times greater than their original size.

2. At first so simple in structure as to be considered structureless, both societies and individual organisms assume in the course of their growth a continually increasing complexity of structure.

3. In a society in its early undeveloped state, as in an individual organism in its early and undeveloped state, there exists scarcely any mutual dependence of parts; in both cases the parts gradually acquire a mutual dependence, and this becomes at last so great that the life and activity of each part are made possible only by the life and activity of the rest.

4. The life and development of a society, like the life and development of an individual organism, are independent of and far more prolonged than the life and development of any of its component units, who severally are born, grow, reproduce, and die, while the body politic composed of them survives generation after generation, increasing in mass, completeness of structure, and functional activity.

Consideration of these striking parallelisms will reveal the fact that the most important of them—the second and third in the above tabulation—present elements that bring the growth of society directly under the general law of evolution. Societies, like individual organisms, pass, during the course of their development, from simplicity to complexity of structure, at the same time that their various parts gradually acquire greater and greater mutual dependence; in other words, the changes undergone by them are in the direction at once of

increasing heterogeneity and of increasing unity. It may, indeed, be remarked incidentally that no more conspicuous illustrations of the formula of evolution can be found than those furnished by the study of social growth. Barbarous tribes, lowest in the scale of development, are nothing but loose, almost homogeneous, aggregations of individuals and families, living in contiguity, but hardly at all depending one upon another. Powers and functions are practically alike, the only marked differences being those which accompany difference of sex. "Every man is warrior, hunter, fisherman, toolmaker, builder; every woman performs the same drudgeries"—that is, there is as yet no specialisation of parts; and similarly, "every family is self-sufficing, and, save for purposes of aggression and defence, might as well live apart from the rest"—there is little or no mutual dependence. Very early, however, important changes manifest themselves. Differentiation begins. With the appearance of some kind of chieftainship arises distinction between the governing and the governed; and as this distinction grows more and more decided, the controlling agencies themselves gradually break up, and in course of time develop into the highly complex political organisations of semi-civilised and civilised lands. Meanwhile the accompanying industrial divergencies are even more significant. Individuals, no longer continuing to perform for themselves all the functions necessary for the preservation of their own lives and the lives of those immediately connected with them, begin to devote themselves to separate kinds of occupation; whence arise the first suggestions of that industrial specialisation which has been carried to such an extreme in our own day, and which with

on "The Social Organism" (first published in the *Westminster Review* for January, 1860), were subsequently worked out in detail in the *Principles of Sociology*, Part II. See also the essay on "Specialised Administration."

every year is tending to become more marked. But one all-important fact must never be lost sight of. These changes along the line of ever-increasing heterogeneity can go on step by step only in combination with corresponding changes along the line of ever-increasing integration. The governing agency can assume the labours and responsibilities of oversight, guidance, and direction only by being relieved, to a degree proportionate to the demand of these upon it, of the daily strain of providing for its own wants. In this way alone can the regulative and maintaining agencies become distinct. Similarly with the industrial changes themselves. As soon as any one individual limits himself to the performance of one particular life-sustaining function, for which he may possess unusual aptitude, he must necessarily become dependent upon the rest of the community to the extent of the functions left unfulfilled by him; while he performs certain functions in excess, and thereby benefits others, others must also perform functions in excess for his benefit. Hence, it is clear that, if society is to maintain its corporate life, no differentiation can take place without integration; increase of specialisation in social changes is not only accompanied by increase of mutual dependence, but is absolutely impossible without it.

From the first stages of social growth to the developments recorded in yesterday's newspaper, what we call progress has everywhere been marked by the same characteristics. All changes in the line of advance have been changes rendering the social structure more complex while increasing its organic unity; and this double-sided movement has by this time gone so far that we are to-day witnessing its effects in the modified inter-relations

of the great nations of the civilised world. The new thought of the solidarity of the human race simply reminds us of the application of the evolutionary principle to the widest possible issues. For not only are the great nations becoming more and more completely specialised and unified within themselves, but the civilised world is itself slowly developing into a vast organic whole, made up of many such highly differentiated but mutually dependent aggregations.

Two important aspects of the principles here indicated must now be re-emphasised as presenting truths to which we shall recur later on. In the first place, in the social as in the individual organism, repetition of similar parts implies a relatively low stage of development, higher stages being characterised by the marking off of special organs for the performance of special functions. In the second place, the activity of every organ being limited, adequate performance of its special function by each organ is incompatible with continuance on its part to perform other functions. That its own function may be duly carried on, it must be relieved by other organs of the need for sustaining other activities.

Having thus indicated the principal parallelisms between societies and individual organisms, Spencer proceeds to point out their chief differences. As there is no necessity here for us to follow him into his consideration and discussion of these, we will confine ourselves to the briefest enumeration of them. He finds the contrasts also to be four in number :

1. Societies have no specific external forms.
2. The living tissue whereof an individual organism consists forms a continuous mass; the living elements of a society do not form a continuous mass, but are more or less

widely dispersed over some portion of the earth's surface.

3. The ultimate living elements of an individual organism are mostly fixed in their relative positions ; those of the social organism are capable of moving from place to place.

4. In the body of an animal only a special tissue is endowed with feeling ; in a society all the members are endowed with feeling.

With much ingenuity Spencer labours to show that these obvious contrasts are neither so fundamental nor so important as would at first sight appear. This part of the matter, however, does not now concern us. But the last-named distinction between the social and the individual organism should be looked at a little more closely, because it points to a profound truth of immediate moment to us here. For what does this distinction imply ? It implies nothing less than this—that there is a radical difference between the relations of parts and whole in the individual organism, and the relations of parts and whole in the social organism.

While in individual bodies the welfare of all other parts is rightly subservient to the welfare of the nervous system, whose pleasurable or painful activities make up the good or ill of life ; in bodies politic the same thing does not hold, or holds to but a very slight extent. It is well that the lives of all parts of an animal should be merged in the life of the whole, because the whole has a corporate consciousness capable of happiness or misery. But it is not so with a society, since its living units do not and cannot lose individual consciousness, and since the community as a whole has no corporate consciousness. And this is an everlasting reason why the welfares of citizens cannot rightly be sacrificed to some supposed benefit of the State : but why, on the other hand, the State is to be maintained solely for the benefit of citizens. The corporate life must here be subservient to the lives of the parts, instead of the lives of the parts being subservient to the corporate life.¹

III.

This, which at first sight might seem to be a conclusion standing by itself, and of no further use to us, may for present purposes be taken as a new point of departure. Let us examine in detail the question of the relations of parts to whole in the social organism.

From the earliest developments of gregariousness to the latest extension of governmental activity, the only ultimate authority for the restraints exercised by society in its corporate capacity over its individual members is the welfare of the individual members. The welfare of society is the proximate end only ; the final end is the welfare of the units of which the society is composed. This has been made clear by the above considerations. But does this mean that the relations of the individual to the corporate life should be or could be of a stable or unchanging character ? From the evolutionary standpoint such an idea is on the face of it untenable. On the contrary, such relations must inevitably vary with the varying conditions of social growth. The social organism, like all other organisms whatsoever, must mould the activities of its inner life in response to outer needs. Only by adequately meeting those needs can its existence be maintained, and, while the ultimate end of social organisation can never be other than that alleged, furtherance of that ultimate end may often be impossible, save by temporary postponement of it to the proximate end ; in other words, the welfare of society may have to take precedence of the welfare of the individual, and individual life be sacrificed to social preservation. We may put the matter even more strongly, and state at once that throughout the past the proximate

¹ "The Social Organism" (*Essays*, vol. i.).

end, that of social preservation, has habitually been of prime importance, the claims of the individual in contradistinction to those of the corporate body having only gradually emerged as vital issues. In all transitional states, indeed, the relations of which we speak must necessarily be relations of compromise; but such compromise will favour the whole as against the parts, or the parts as against the whole, according to the type of social organisation—the type itself being evolved in answer to the medium of social needs. The question therefore arises, How do the general conditions of any given society tend to determine the relations of its citizens to the State?

The evolution of life at large, alike in its higher and in its lower forms, has been possible only because in the average of cases there has throughout been a definite connection between conduct and consequence. But for the fact that individuals structurally best adapted to the conditions of their existence have prospered by means of such fuller adaptation, while individuals less favourably endowed have dropped out in the struggle for existence, no advance in life could ever have taken place. This law, which, ethically enunciated, becomes the principle that each individual ought to receive the good and evil arising from his own nature, is the primary law of existence, holding good of all creatures, and qualified in those living solitary lives only by that "self-subordination needed among the higher of them for the rearing of offspring."

In non-gregarious creatures, therefore, the only conflict is between self-subserving and race-subserving activities; and species which do not postpone in requisite degrees the former class of

activities to the latter will inevitably disappear. But in gregarious creatures another factor comes into play. Each individual in the pursuit of his own satisfactions must be prevented from interfering with the similar pursuit of their own satisfactions on the part of others; for in the absence of such prevention an associated state would be impossible, and each individual would lose the benefits that co-operation would bring. The associated state, therefore, demands, in addition to that large postponement of self to offspring which lies at the bottom of all life, a constant postponement of self to fellows, negatively by restraint of actions that impede, and positively by performance of actions that further, the fullest and most harmonious co-operation.

Putting these two principles together, we are able to establish an important conclusion. The prerequisite of life in general embodied in the first must be qualified in the way indicated by the second when the individual, no longer isolated, lives in association with others whose presence and claims necessarily limit the range of his activities. Hence we reach the formula of absolute justice.¹

¹ This may be the proper place to point out a distinctive feature in Spencer's Ethics—the separation of absolute from relative ethics. Absolutely right conduct is conduct having no concomitant of pain, or painful consequences, either to self or others; all other conduct, though it may be relatively right, or the least wrong possible in the circumstances, is not absolutely right. In the drawing up of a code of absolute morality, therefore, we must consider the ideal man in an ideal state of society; and relative morality must then aim to approximate to this as closely as is possible under any given conditions. In discussing the Spencerian ethics this vital distinction must never be lost sight of. See *Data of Ethics*, chap. xv., and compare this

"Every man is free to do that which he wills, provided he infringes not the equal freedom of any other man."

But now we have to notice that under certain conditions these abstract principles require still further qualification. The ultimate authority for the existence of the associated state is, as we have seen, the increased welfare that all its individual units are enabled to obtain by means of it. This renders the preservation of the associated state itself of the first importance; and when it is imperilled, sacrifice of the individual to secure its continuance receives strong ethical sanction. This fact gives us the clue for which we are in search in our inquiry as to how the relations of citizen to State depend upon existing social conditions. For the welfare of the individual can only, ethically considered, take entire and immediate precedence of the welfare of the community at large so long as the community itself is not in danger—in other words, during periods of sustained peace. During periods of military activity or preparation—that is, when rightly or wrongly it is supposed that the community is jeopardised from without—the individual has, to a large extent, to be made subservient to the State, often even to the extent of being called upon to surrender property and life to aid in keeping the social structure intact.

We see, then, that in the social organism the relations of parts to whole depend upon the average activities of the whole. So long as the community is engaged in a struggle for existence with antagonistic communities, its corporate

life has to be maintained at any cost—even at the cost of its component units; and societies in which this necessity is most completely met stand, other things equal, the best chance of preservation. Sanction for the temporary postponement of the individual to the State is thus obtained; but this sanction holds good only so long as the specified conditions continue. Just as soon as the external struggle for existence ceases, the sanction for the postponement of the individual to the State can no longer be alleged, and all qualification lapses in regard to the principles above set forth.

IV.

Before we can appreciate the full significance of this conclusion, we must look at the matter for a moment from a somewhat different point of view.

Theoretically, three kinds of social aggregation may be distinguished, according to the purposes which association is intended to subserve. Men may group themselves together (1) merely for the sake of companionship; (2) for combined action against enemies, animal or human, or both; or (3) for better satisfaction by means of reciprocal aid of the various requirements of life—higher as well as lower.¹ The resulting aggregates may

¹ *Justice*, § 102. All this does not, of course, mean that men have ever *consciously* banded themselves together for any one or more of these purposes. We have here nothing to do with the monstrous fiction of a social contract, which was one of the favourite theories of earlier political speculation, from the days of Hobbes and Locke onward, and which at the hands of its greatest exponent, Rousseau, became charged with immense revolutionary power. We simply recognise that, according to obtaining conditions, association has been naturally brought about here in response to one kind of demand, there in response to another.

with *Social Statics*, Part I., chap. i., and the article on "Absolute Political Ethics" (*Essays*, vol. iii.).

be defined respectively as non-co-operative, military, and industrial.

Of the first an instance is found in the case of the Esquimaux, who live in groups, but who, having no external enemies, never combine for purposes of corporate offence and defence, and among whom industrial co-operation has gone no further than a division of labour between man and wife in each separate family. Examples of the second class are of course very numerous, and may be found in the purest form in "hunting-tribes at large, the activities of which alternate between chasing animals and going to war with one another," and in which industrial co-operation, if exhibited at all, is exhibited only in a very rudimentary way. When we come to the third division we are met, in search for illustrations, by the difficulty arising from lack of material. The purely industrial society does not yet exist in a developed form. A few perfectly peaceful tribes are to be found here and there in the world—like the Bodos, the Dhimals, and the Kocchs—who, never needing to combine for aggression or defence, do yet to some extent render mutual assistance in the simple activities of their daily lives. But all advanced peoples without exception, as well as most of those relatively low down in the scale of civilisation, yield examples of association for the achievement of all the three ends above distinguished. The desire for social intercourse is satisfied; life is made easier and larger by means of industrial co-operation; but at the same time there is still need for corporate action, if not of an aggressive, then, at any rate, of a defensive nature.

Now, the fact that even the most fully industrialised of developed societies are still *quasi-military* in their constitution

introduces us to an important truth. Antagonistic as are the military and the industrial activities, throughout the whole course of social evolution, from the very beginning until now, the former has played a main part in the development of the latter. But for war, little advance would have been possible. War has been essentially the consolidating factor, and its ever-widening sweep has in the upshot only cleared a larger area for the play of industrial forces. Each new integration brought about by conquest has ultimately changed the warlike relations formerly existing between the communities integrated into relations of a peaceful character; their interests, instead of being antagonistic, become interdependent. As this process, which has gone on from the earliest dawn of human history, continues, its results, though of the same general nature, will be on a grander scale. Eventually, war will bring about its own destruction by aiding in the production, throughout a world-area, of those industrial conditions which will render anti-industrial relations henceforth impossible.

Recognising this fact—which is indeed one of too much significance ever to be lost sight of—we can understand how it is that even the most highly-civilised nations are still in a transitional state. A factor of supreme importance in the earlier stages of their development, war, though of ever-decreasing importance in their more advanced stages, has, down to quite recent times, played a large part in the unification of national interests, which is one phase of all social progress. Hence, we can for the time being reach nothing better than a compromise between the demands of military co-operation on the one hand and the demands of industrial co-operation on

the other. But here a further distinction is to be made. This compromise, formerly in favour of the military claims, is now (in some modern countries considerably and in a few markedly) in favour of the industrial claims. While hitherto the all-important thing was to keep up military efficiency, and industry was valued only to the extent to which it aided in doing this, now, on the contrary, industrial growth is the all-important thing, and military efficiency is valued only in so far as, by yielding adequate protection, it furthers peaceful co-operation. Hence, though, among the more advanced societies, we cannot specify any as absolutely military or absolutely industrial, we can still divide them according as the warlike activities take precedence of the peaceful, or the reverse, into two classes, which we may call the military-industrial and the industrial-military.

What, now, should we infer to be, and do we actually find to be, the characteristic differences of these two classes of societies? Their most salient and fundamental points of distinction may be briefly summarised.¹

In the military-industrial type, the corporate life being the unit of organisation, we have centralised control, despotic rule, and widely-ramified gradations of rank. As reflecting the average life of the community, the religion is one of enmity—is marked by the prominence of stern doctrines and a vindictive spirit; while the ecclesiastical system exhibits an elaborate hierarchy closely resembling the hierarchy of the political system. Meanwhile, industrial activities, regarded only as factors for the sus-

tentation of the military system, are not only despised as vulgar, but are more or less subjected to State interference and control; and since it is the welfare of the State that is always held in view, the general life of the community is dealt with in any way that may seem to secure higher corporate capacity. Thus the *régime* is one of compulsory co-operation. The individual belongs to the State and exists for the State.

Over against this we may set the leading characteristics of the industrial-military type. The need for such corporate action as is called for in war having largely lapsed, there is a relative absence of centralised control; democratic rule gradually supersedes despotic rule; and the old gradations of rank slowly lose their meaning and tend to disappear. The harsher traits of the religious creed drop away, and, in answer to the peaceful life of the society, gentler and more humane aspects come into relief. Along with this goes the breaking up of the ecclesiastical as of the political hierarchy, and the rise and spread of nonconformity. Industrial activities, no longer considered only as furnishing maintenance for the State, little by little rise in general esteem and free themselves from State control and dictation, while the individual, ceasing to be simply a servant of the general community, refuses to tolerate the interference of the community in the various pursuits of his private life. This is the *régime* of voluntary co-operation. The State exists simply for the individual.

It is hardly necessary to say that, omitting the many other cases that might be cited in illustration, the history of civilisation during the past three or four hundred years has shown, along with gradual decrease in military activity,

¹ *Principles of Sociology*, §§ 258-262. See also the article on "Specialised Administration."

a distinct, though of course by no means regular, movement away from the military-industrial type of social organisation and towards the industrial-military type. This movement, though general, has gone further in some countries than in others; and the contrast presented to-day between England and America on the one hand, and the great continental nations of Europe on the other, is a striking and instructive one. All this is manifest enough; but there is another point, equally significant in its way, that might easily escape attention. The metamorphosis in question goes on only while conditions remain favourable; as soon as they become unfavourable, a retrograde tendency asserts itself almost immediately. No lessons of recent history are more weighty than those taught by this social atavism. After remarking, in the course of one of his many contributions to the discussion of this subject, that, just before the civil war in America, industrialisation had advanced to such an extent in the Northern States that "military organisation had almost disappeared, and everything martial had fallen into contempt," Spencer continues:—

During the late war in America Mr. Seward's boast—"I touch this bell, and any man in the remotest State is a prisoner of the Government" (a boast which was not an empty one, and which was by many of the Republican party greatly applauded)—shows us how rapidly, along with militant activities, there tends to be resumed the needful type of centralised structure, and how there quickly grow up the corresponding sentiments and ideas. Our own history since 1815 has shown a double change of this kind. During the thirty years' peace the militant organisation dwindled, the military sentiment greatly decreased, the industrial organisation rapidly developed, the assertion of the individuality of the citizen became more decided, and many restrictive and despotic regulations were

got rid of. Conversely, since the revival of militant activities and structures on the Continent our own offensive and defensive structures have been redeveloping; and the tendency towards increase of that centralised control which accompanies such structures has become marked.¹

Could we do so without committing ourselves to an unmanageable digression, we might profitably consider this subject in some of its remoter bearings. For—to indicate a few points only—the marked increase in military activity which has taken place among ourselves during recent years has not only brought about this increase in centralised control and corresponding tendency to tamper with the liberty of the individual, but has also been necessarily accompanied by the revival of many characteristics of the military type of society—excessive loyalty to rulers; deference to authority; reassertion of the claims of the privileged classes; greater activity and power of the priesthood; intellectual reaction all along the line. Nor is this all. Less obvious, but not less important, changes may meanwhile be noted in the general temper of society. The recrudescence of militarism and the national spirit of aggression has everywhere called into play the feelings which properly belong to the stage of barbarism; and the love of violence is shown (among countless other ways) by the immense popularity of all kinds of literature and art which deal with deeds of turbulence and bloodshed; by the current mania for athleticism and the worship of physical strength and prowess; and by the re-establishment of brutal sports. It is a truth which few people seem able to appreciate that there is a vital relationship between the character of the life of

¹ "Specialised Administration." See also *Justice*, § 72, etc.

a society and the character of the lives of its component units; that national violence will be always attended by individual violence; and that, in a word, it is practically useless to preach the gospel of love to the men and women of a nation while the nation itself is living according to the gospel of hate.¹

But now, returning to the main line of our argument, we have to ask: What practical conclusions are we to draw from the inquiries which we have instituted?

First, that the rise of individual independence of the State, and the decrease of State meddling with the multitudinous affairs of private life, have naturally accompanied the gradual decline of militancy and the slow reconstruction of the great nations of the world upon an industrial basis. Such has been throughout the most noteworthy characteristic of social evolution.² Secondly, that as, from first to last, the end to be achieved by society in its corporate capacity is the welfare of its units, the ethical warrant for the coercion of the individual by the State, derived from the condition of war, disappears as war itself ceases, and cannot be alleged as holding for a condition of peace. And, thirdly, that those who seek to reverse the order of social evolution by re-expansion of the scope of State activity and power are endeavouring to fit down artificially a system belonging properly

to one type of social structure upon the other type of social structure, which has all along been outgrowing it—are engaged, therefore, in a retrogressive enterprise, which is in the very nature of things foredoomed to disaster.¹

V.

But these conclusions, important though they are, do not represent the whole of the case. Not only during the course of social development does ethical sanction for State interference with the individual gradually decline, but the relinquishment of such interference is seen, from the evolutionary point of view, to be a necessary accompaniment of the increasingly adequate performance on the part of government of the special functions for which it is properly responsible.

Here we must revert to the principle of the physiological division of labour, already touched upon. It has been shown that repetition of similar parts, whether in an individual structure or in society, implies lowness of organisation, evolution being everywhere characterised by the complexity resulting from the multiplication of different parts fulfilling different duties. Beyond this it has been made clear that specialisation of function brings with it limitation of function. "At the same time that each part grows adapted to the particular duty it has to discharge it grows un-

This is a truth upon which Spencer was never weary of insisting, and to which he returned in his very last book (see the essay on "Re-Barbarisation," in *Facts and Comments*).

² An interesting side-light is thrown upon this whole question of the gradual development of personality by such books as Sidney Lanier's *English Novel* and Mr. H. M. Posnett's *Comparative Literature*, in the "International Scientific" Series.

¹ It is not by accident that socialistic schemes flourish most in a military atmosphere. In Germany, "where militancy is most pronounced, and where the regulation of citizens is most elaborate, socialism is most highly developed; and from the head of the German military system has now come the proposal of regimental regulations for the working classes throughout Europe" (*Justice*, § 26).

adapted to all other duties"¹—a truth exemplified alike in biology and in political economy. The application of this principle to the matter in hand is obvious. "The governmental part of the body politic exemplifies this truth equally with its other parts. In virtue of this universal law, a Government cannot gain ability to perform its special work without losing such ability as it had to perform other work."²

Hence we must meet, with a more definite answer than has yet been given or implied, the question, What is the special work of a Government?

We have said that the only ultimate sanction for social organisation in any form is the welfare of the individual units. Co-operation secures for all a larger and fuller life than each could secure for himself; and the business of the community in its corporate capacity is to maintain the conditions which make co-operation possible. How can it do this? By protecting the individual in such a way that in each case the fundamental laws of life shall not be interfered with; in other words, by securing that state of things which enables each citizen to receive the full benefit of his character and activities, subject only to the limitations necessarily imposed upon him by the presence of fellow-citizens having like claims.

That this, and this alone, is the true function of the State, is proved (though not only in this way) by the striking fact that, whatever may have been the other duties assumed or rejected by Governments in various places and at different

times, this duty has never been overlooked. The earliest and the latest developments of social structure, differ though they may in every other respect, alike hold this end in view. Positive regulation of the citizen by the community has varied all the world over, and varies still in extent, rigour, and direction; negative regulation has uniformly been accepted, theoretically at any rate, as coming directly within the range of governmental activity.

This is clearly brought out by a comparison of the military and industrial types of society. We have seen that the relation of the individual to the community immediately depends upon the social structure evolved in response to average needs. Yet though, where the activities are predominantly warlike, the unit apparently exists for the sake of the whole, while where the activities are predominantly peaceful the whole clearly exists for the sake of the unit, in each case the ethical authority for State regulation, be this small or great, is ultimately the maintenance of the conditions pre-requisite to peaceful co-operation. During periods of antagonistic relations with other communities the main business of government, therefore, is to protect society from external enemies, internal regulation being wholly subservient to this special end. When, with the gradual cessation of war, this function lapses, there remains still the duty of maintaining the conditions pre-requisite to peaceful co-operation in other ways—namely, by protecting society from internal enemies. And now let us note the supremely important inference. In the one case, as in the other, ethical sanction warrants the interference of the State with the individual so far as is necessary to achieve

¹ "Representative Government: What is it good for?" (*Essays*, vol. iii.)

² *Ibid.* Compare the essay on "Over-Legislation" (*Essays*, vol. iii.).

the object here set forth, and no further. As in the military *régime* no moral right can be shown to exist for State coercion of citizens beyond the point required for successful resistance to antagonistic societies, so in the industrial *régime* no moral right can be shown to exist for State coercion of citizens beyond the point required for successful resistance to antagonistic units; State functions are ethically limited to the maintenance of strictly equitable relations among the separate members of the community. Thus we come round from another side to the formula of abstract justice already given. Every man must be held free to do that which he wills, provided only he infringes not the equal freedom of other men; and the duty of the State is to guard each individual citizen from such infringement. When the State itself commits such infringement, therefore, it not only exceeds its duty, but it becomes actually guilty of that which it is its immediate and express duty to prevent.

Such, then, is the proper function of the State, and in fitting itself more completely for this the State necessarily, as we have seen, becomes less fit for anything else. In low, undeveloped forms of society the essential work of protection against enemies, internal and external, is performed with extreme imperfection, at the same time that it is encumbered with countless other kinds of work which do not appertain to government at all. But with social evolution progressive differentiation, while gradually relieving the ruling agency of these multitudinous extra duties, enables it to discharge its own particular function with ever-increasing efficiency. Thus the natural tendency is towards specialised administration—towards the production of a type of

government best adapted for the proper work of government, and *therefore* least adapted for any other sort of work whatsoever.¹

This doctrine has been called by all sorts of hard names, not only by avowed socialists, but by many "practical legislators" and "common-sense politicians," who, while they would be horrified at the thought of being identified with the socialists, are constantly favouring movements that are socialistic under the thinnest possible disguise. But it is safe to say that the majority of those who are so loud in their anathemas of Spencer's individualism are utterly unaware that it has anything but a negative side. Familiar with Spencer's unmeasured denunciation of State interference—denunciation everywhere backed up by long arrays of facts—they seem to think that there the matter ends. But there the matter does not end. The truth, already implied in the above considerations, and now to be definitely set forth, is simply this: that while Spencer protests against the continual meddling of Government with affairs that do not concern it, he advocates at the same time a more and more complete and conscientious discharge on its part of the business that properly falls within its scope. Hitherto, and at the present time, over-legislation, where legislation is not wanted, has inevitably been accompanied by under-legislation where legislation is sadly called for; things are regulated that ought to be left to take care of themselves, and, as a necessary consequence, other things are left to take care of themselves that ought to be regulated. Spencer always sought to

¹ See particularly the essay on "Representative Government: What is it good for?"

turn the scale to the other side—curtailing governmental activity in one direction, but expanding it in another.

In his conversation on "The Americans"¹ (October 20th, 1882) there is a passage of special interest bearing directly upon this point. "But we thought, Mr. Spencer," said the interviewer, referring to some remarks that had just passed concerning the relation of the individual to the community, "you were in favour of free government in the sense of relaxed restraints, and letting men and things very much alone, or what is called *laissez-faire*." "That," answered Spencer, "is a persistent misunderstanding of my opponents. Everywhere, along with the reprobation of government intrusion into various spheres where private activities should be left to themselves, I have contended that in its special sphere—the maintenance of equitable relations among citizens—governmental action should be extended and elaborated."

How often this contention was made by him careful study of even the more popular of Spencer's political writings will make clear. The question was one,

¹ Reprinted in the collected edition of his *Essays*, vol. iii.

indeed, to which he returned again and again.¹ Meanwhile, as it is not our purpose here to follow the general doctrine that we have outlined into details, we must rest content if we have shown that this positive view of the matter, so commonly lost sight of, is nevertheless of the essence of the whole. The object of this chapter, as stated at the outset, has been not to expound Spencer's social and political teachings in their particular applications, or to enter into any discussion of them from so-called practical points of view, but to indicate the principal lines of contact between them and the body of his thought. Enough has been said to prove that his individualism, so far from being artificially foisted on to the rest of his system, as even some friendly critics would have us believe, grows naturally out of, and, therefore, properly belongs to, it—is an organic part of his general doctrine of universal evolution.

¹ See especially the essays, already so frequently referred to, on "Representative Government," "Over-Legislation," and "Specialised Administration"; also "Political Institutions," *passim*; *The Study of Sociology: Postscript*; and *Justice*, chap. xxv., which last compare with *Social Statics*, chaps. xxi., xxii.

CHAPTER V.

THE ETHICAL SYSTEM OF SPENCER

I.

HAS the doctrine of evolution modified our conceptions of morality? Has it in any way helped to establish the principles of right living upon a firm, scientific foundation? These are questions that meet us on the threshold of such a study as we are to take up in the present chapter, and they must be dealt with before we can place Spencer's contributions to ethical science in their proper light, or understand their full significance.

The struggle of a new idea concerning the universe with the old ideas whose peaceful reign it disturbs almost invariably passes through two stages—a stage of positive antagonism and a stage of high-handed conciliation. At the outset it is war to the knife. Champions of the older order rush into the lists, intent on proving not so much that the new thought is untrue as that it is inexpedient. They ask the world not to examine the evidence, but to calculate the consequences. If the ancient cosmology is overthrown, and the philosophy of life so long based upon it crumbles to pieces as a necessary result, then, argues the reactionist, we know what we have to expect. The foundations of morality will be swept away; social disintegration will follow; religion itself will perish. A thousand pulpits take up the warning cry; the Press teems with hysterical vaticinations; strong voices are raised in argument or appeal.¹ Amid all the

angry outcry and popular confusion that ensues, the new thought holds secure its tiny germ of life. While men work, and wrangle, and sleep, it makes its silent way; and before the world realises the vastness of the change that has been wrought in its midst, the truth comes to be recognised as true. Then, strangely enough, we hear nothing more of the disastrous consequences that were to follow in its train. The moment for conciliation has arrived, and the attitude of the conservative is soon taken up. Where is the need of all this excitement? he asks. We all know the thing is true—in theory; but, after all, it is only a theory, and what difference does it make one way or the other? You are quite overrating the practical importance of the whole issue. The world is neither better nor worse for the revelation. The old religion is untouched, the old morality remains just where it was before.

Through these two stages of experience, no less than almost every other great theory that science has given to the world, the doctrine of evolution has passed on its way to general recognition. At first the Cassandra voices raised against it were of the loudest and the most persistent. The end of the moral cosmos was at hand. Natural selection was to give us a cold, bloodless system of unrestrained appetite, untempered egoism, unrelieved brutality, in place of the benign and simple altruism of the

¹ See, for example, Professor Goldwin Smith's

powerful essay on "Morality and Theism" in his *Guesses at the Riddle of Existence*.

Sermon on the Mount. The higher feelings were to have no further play ; every quality that had beautified the life of saint and martyr and philanthropist was to vanish before the new gospel of the survival of the fittest in the universal struggle for existence. Every one for himself, and the weakest to the wall—that was to be the modern transliteration of the Golden Rule, with what frightful results to the humanity of the future it was hardly needful to specify.¹ The prophetic picture drawn was dire enough, it is true; the more wonder surely (for all this, let us remember, took place not at the period of the Reformation, but within the memory of men now living) that it has so soon been all but forgotten. For the intellectual offspring and representatives of these passionate opponents of evolution in the early years of its growth are anxious to have us know that they at least are not afraid of it. Why should they be? It was, as they now discover, implied in all their teaching long before the days of Darwin and Spencer ; and, as a matter of fact, it adds nothing, one way or the other, to the discussion of

the great practical questions of life. The end of the moral cosmos at hand? Oh, no ; for evolution, though it may have thrown some new light upon biology, has nothing whatever to do with ethics. Any attempt to work it out into practical applications will only reveal its sterility. Let the scientists do what they like about it, then. We are not concerned. Our morality is still the morality of them of old time. Evolution has not changed it, not even in the slightest particular.

In what sense it may be maintained that there is a large element of truth in this sweeping declaration, as well as the careful qualification which it requires, will become clear later on. There is one point, however, that we may conveniently deal with at once. It is commonly and properly said that the whole edifice of modern science is founded upon the datum of causation. The belief in the uniformity of Nature and of natural processes is exactly that which all our investigation is widening, deepening, and everywhere making more and more secure ; and so strong is the hold that it has already taken upon the cultivated mind, that it is now admitted on all sides, by those whose training in exact methods of inquiry renders them competent to judge, that there is no room left for the ancient theological conceptions of the causeless, the lawless, the arbitrary, in the material universe as it stands revealed to our ken. The persistent tendency of all evolutionary thought has been to emphasise this sense of the universality of law where it was already present, and to introduce it where it did not exist before. In this way, as a thoughtful writer on evolutionary morals has well pointed out, the doctrine of evolution has really contributed more to ethics than to the natural sciences.

¹ It is perhaps worth while to notice that, in ethical speculations on the influence of the doctrine of evolution, survival of the fittest is too often taken to mean survival of the physically strongest. This, for instance, is the mistake made by Oliver Luttrell in *Sir Walter Besant's Bell of St. Paul's*; and his reasoning upon the subject is characteristic of a widespread error in general thought. The idea of the preservation of altruistic instincts by the selection of the groups in which these are strongest, and of the development of clan-sympathies and paternal feelings through the part these play in social evolution, never seems to enter the popular mind. Nor is the great fact commonly recognised that the qualities which ensure the survival of a society may not be of advantage to the individual, except that indirectly he gains or suffers with the group of which he is a unit.

These latter "at least recognised before the appearance of the theory of evolution the element of constancy ordinarily called law, and attempted to formulate this constancy as a basis of thought and action."¹ But in ethics no such systematic attempt had been made, morality being, indeed, expressly regarded as a region outside and above the domain of law. With the application of evolutionary theories to moral principles went for the first time the emphatic assertion that the connection of cause and effect must be taken to hold good in moral no less than in natural science; that, indeed, only on recognition of this connection is any science of ethics possible. While the evolutionary theory, therefore, only strengthened and deepened the conception of causation already existing in other departments of research, it may be said almost to have introduced that conception into investigations on the subject of morality. Something of what is meant by the great change in thought thus brought about we shall see presently. Here we may well bear in mind the fact that, if the doctrine of evolution had done no more than impregnate sociological discussion with this principle of causation, it would have made good its claim to have given ethics a new basis and starting-point, since in this way it has bridged over the wide chasm between a merely empirical and a truly scientific system of morality.

Meanwhile, that we have now reached a crisis in morals is sufficiently manifest, I think, to all who take an interest in the larger movements of the time. Be the influence of the theory of evolution

upon ethics what it may, the most vigilant and sagacious thinkers on every side acknowledge that the forces most deeply implicated in the changes that are gradually coming over the whole of our civilisation are carrying us to the verge of a moral interregnum. The supremacy of the older, theologically-derived sanctions of conduct is breaking down; and the danger, immediate and serious, is lest they should be generally cast away as effete and valueless before any other sanctions are established to take their place. At this period of transition, while, as Matthew Arnold put it, "the old is out of date" and "the new is not yet born," the world at large undoubtedly stands in peril of a moral collapse. Half-educated reformers, of more zeal than wisdom, in their anxiety to sweep away every vestige of what they fulminate against as the ancient superstitions of the race, are too apt to overlook the solemn fact, written none the less in letters of fire on every page of history, that the mere destruction of restraints and inspirations under and in virtue of which men have developed hitherto would mean not advance, but chaos. It is well enough to throw aside every husk of old doctrine; but may we not find ourselves sometimes in our careless haste discarding, along with much useless rubbish, some germs of vital truth that the world cannot afford to be without? It is perhaps worth while to pause occa-

¹ C. M. Williams, *A Review of the Systems of Ethics Founded on the Theory of Evolution*, pp. 514, 515.

¹ The case of Lessing is here in point. Writing to his friend Mendelssohn concerning the rationalistic experience of his earlier years, he confesses that in "getting rid of certain prejudices" he had also deprived himself of some things that he would have to recover. "That I have not in part done so already," he adds, "is only due to my fear lest, by degrees, I should drag the whole rubbish into the house again."

sionally to ask ourselves such a question as this; and to remind ourselves that the emotions, upon which, after all, the larger part of morality finally depends, cannot without deadly risk be cut loose from their old moorings and set adrift upon the treacherous sea of chance, at the mercy of every current and squall. Upon the whole, when we remember the congruity that must, according to the evolutionary theory, exist between the creed of a people and their average needs, we cannot protest too vigorously against crude experiments and ill-advised tamperings with the world's heritage of traditions, especially when anything so sacred and essential as the mainsprings of conduct are concerned; we cannot too strongly discountenance the spirit of the rash iconoclast who cares only to sap the ancient foundations of moral faith, and has no principle of guidance to offer in exchange for what he is intent upon snatching away. In such an emergency the clear course is to let the work of destruction take care of itself, and see what can be accomplished in the far more difficult as well as infinitely more important task of reconstructing the bases of morality in accordance with the new thought and the growing knowledge of the time. It is the positive rather than the negative message of science that it concerns us to understand.

Clear recognition of this momentous fact led Spencer, while working out the *Synthetic Philosophy*, to depart from the regular outline as originally published, and to take up the last division—the *Principles of Ethics*—at the expense of several intervening portions of his scheme. In the preface, dated July, 1879, to the *Data of Ethics* (Part I. of the completed

work), he thus wrote in explanation of his course:—

I am the more anxious to indicate in outline, if I cannot complete, this final work, because the establishment of rules of right conduct on a scientific basis is a pressing need. Now that moral injunctions are losing the authority given by their supposed sacred origin, the secularisation of morals is becoming imperative. Few things can happen more disastrous than the decay and death of a regulative system no longer fit, before another and fitter regulative system has grown up to replace it. Most of those who reject the current creed appear to assume that the controlling agency furnished by it may safely be thrown aside, and the vacancy left unfilled by any other controlling agency. Meanwhile, those who defend the current creed allege that, in the absence of the guidance it yields, no guidance can exist: divine commandments they think the only possible guides. Thus, between these extreme opponents there is a certain community. The one holds that the gap left by disappearance of the code of supernatural ethics need not be filled by a code of natural ethics; and the other holds that it cannot be so filled. Both contemplate a vacuum, which the one wishes and the other fears. As the change which promises or threatens to bring about this state, desired or dreaded, is rapidly progressing, those who believe that the vacuum can be filled, and that it must be filled, are called on to do something in pursuance of their belief.*

This paragraph makes Spencer's position perfectly clear. As before pointed out, his interests had from the first been practical; his earliest publications—the letters on the *Proper Sphere of Government* and the more mature work on *Social Statics*—had dealt with the actual problems of the day; and the desire to apply philosophic principles to the questions of social growth and the conduct of life subsequently inspired the *Synthetic System* itself. Properly speaking, then, all his other work led up to his *Ethics*; to leave that division

* *Data of Ethics*, p. vi.

untouched, therefore, would have been to leave his whole enterprise, comprehensive and valuable as it might have been as a contribution to the organisation of knowledge, in the condition of "Giotto's tower in the old Tuscan town"—a magnificent effort, yet "wanting still the glory of the spire." "My ultimate purpose," he writes in the preface from which I have just quoted, "lying behind all proximate purposes, has been that of finding for the principles of right and wrong, in conduct at large, a scientific basis." Naturally, therefore, he could not but feel that to allow this purpose to remain unfulfilled, "after making so extensive a preparation for fulfilling it, would be a failure the probability of which" he would not like to contemplate. Hence the persistency with which, amid much interruption from ill-health and some disturbance from other causes, he laboured at this portion of his task, and the satisfaction which he expressed when it was at length brought to completion.

II.

Properly to appreciate the place occupied by the work of Spencer in the general development of ethical thought, we must understand something of what had been done towards the establishment of a scientific basis of morality by writers who had preceded him in the field. This will bring out his relation to the doctrines of the so-called orthodox schools on the one hand, and to the theories of earlier independent thinkers on the other.

An intrinsic difference in principle has long divided all ethical investigators, no matter what their minor points of agreement or disagreement may be, into two great hostile camps, usually known as the intuitive or intuitional, and the

inductive or utilitarian. This fundamental diversity of view may be traced back dimly to the days of Greek philosophy, but it has acquired its immediate importance only within comparatively recent days. Through Cudworth, Clarke, and Butler on the one side, and through Hobbes, Helvétius, Bentham, and the Mills on the other, we can follow the main lines of divergence and antagonism down to the time when the doctrine of evolution entered the arena, and, offering a hand to each of the hereditary foes, led the way to a conciliation hitherto undreamed of.

The main questions at issue between the intuitionists and the utilitarians, difficult as they may seem in solution, may be very briefly stated. They are the fundamental questions of the ethical standard and the moral sense. What, in the ultimate analysis, is the standard or criterion of right and wrong? And, given that standard, how do we ourselves distinguish between them? Varied in detail as were the answers given by the intuitionists to these questions, they agreed substantially in this—that both the criterion of right and wrong, and our own power of distinguishing between them, are to be sought in an innate and divinely-implanted moral sense or conscience. The human mind was thus regarded as possessing an ultra-experiential faculty of judgment concerning conduct—a faculty which is itself unresolvable into any simpler elements, and beyond which there can be no appeal. Against this view it was the mission of utilitarianism to enter an emphatic protest. The followers of the inductive school refused to accept the alleged innate and divinely-implanted moral sense as anything more than a myth. For them our only test of conduct is the test furnished

by experience of the results of conduct ; and the so-called moral faculty or conscience, so far from being immediate and simple, is itself merely the organised registration in the modern civilised adult of his observations of the consequences of the actions of himself and others. Thus, from the standpoint of the intuitionist, virtue or right conduct is in itself not only a proximate, but also an ultimate, end ; while the utilitarian regards it as a proximate end only ; the ultimate end, which imparts to it its particular quality of virtuousness or rightness, being some kind of utility which it is held to subserve.

This, I think, is sufficiently clear. But as the point is of importance, I will supplement my own statement by a quotation from a distinguished historian who was himself an adherent of the intuitional view. The intuitional moralists, wrote the late Mr. Lecky—

believe that we have a natural power of perceiving that some qualities, such as benevolence, chastity, or veracity, are better than others, and that we ought to cultivate them and repress their opposites. In other words, they contend that, by the constitution of our nature, the notion of right carries with it a feeling of obligation : that to say a course of conduct is our duty is in itself and apart from all consequences an intelligible and sufficient reason for practising it ; and that we derive the first principles of our duties from intuition.

The utilitarian, on the contrary, denies—

that we have any such natural perception. He maintains that we have by nature absolutely no knowledge of merit and demerit, of the comparative merit of our feelings and actions, and that we derive these notions solely from an observation of the course of life which is conducive to human happiness. That which makes actions good is that they increase the happiness or decrease the pains of mankind. That which constitutes their demerit is their

opposite tendency. To procure the greatest happiness of the greatest number¹ is therefore the highest aim of the moralist—the supreme type and expression of virtue.

These, amid many minor points of difference, not only helping to separate more thoroughly the two great parties from each other, but often breaking up those parties themselves into sundry more or less closely segregated clusters, may be taken as the most salient characteristics of the antagonistic schools. While they remained, in their older forms, the only important candidates for popular favour, the suffrages of the world were very unequally divided between them. Besides the rank and file of the various religious denominations, an overwhelming majority of the most prominent moralists, including practically all those belonging to the Christian Church, strenuously maintained the intuitionist doctrines. The transcendental nature of morality was the central principle around which men of the most diverse theological and social views were called upon to rally ; and the orthodox army, no matter how much its champions might be divided among themselves, thus presented a solid front to the enemy. The other side was never popular ; but it made up for this by attracting to itself some of the clearest-headed and most original thinkers of the

¹ This principle—the greatest-happiness principle, as it is succinctly called—is, of course, that enunciated by Bentham, the man with whose name the system of the older utilitarianism is most intimately associated. It will be found stated and developed in his *Introduction to the Principles of Morals and Legislation*, first published in 1789. The principle itself has from that time downward been the object of violent attack at the hands of the intuitional party ; but perhaps the keenest criticism that it has ever been subjected to is that contained in the *Data of Ethics*, chap. xiii.

¹ *History of European Morals*, chap. i.

time, making a special appeal to men of sceptical tendencies, as well as to those trained in scientific methods of investigation.

We need here touch upon those aspects only of the old intuitionist-utilitarian controversy which will help us to understand what has been gained by the application of evolutionary principles to ethical theory. A glance at the positions respectively taken up by the two parties on the question of the moral sense will, for this purpose, place us at the proper point of view.

Let us notice, then, that the diversity of moral sentiments and ideas exhibited by different peoples, and by the same peoples at different stages of their growth, is a problem for which the intuitionists have never yet found a satisfactory solution. We are told that there are many religions, but only one morality. This is true in a sense, but not by any means in the sense intended by those by whom the phrase is currently employed. The statement, which indeed smacks suggestively of the attractive humanitarianism of the eighteenth century, might have passed unquestioned at a time when sociological speculation was so entirely untrammelled by any reference to fact that men like Morelly and Rousseau could discourse eloquently of a mythical state of Nature and a purely hypothetical barbarism, and indignantly ask an artificial society to contrast man as the product of civilisation with man in his primitive condition of freedom and happy innocence. But what might have done well enough in Rousseau's day will not do in ours. Progress in ethnological and anthropological research has given us the real savage in place of that creature of "an extinct tribe which never existed"—the savage of our imagina-

tion; and instead of arguing as to what uncivilised man might have been and (in view of our theories) ought to have been, we must now take him, whether we like it or not, as he has been and is. We have to remember that the intuitionist doctrine of the moral sense is an inheritance from a period when practically nothing was known of the actual history of our race;¹ it was constructed in reference to supposed theoretic necessities, and not upon an examination of facts; and it would have been surprising enough, therefore, had it remained unshaken when growing knowledge brought it to the test of reality. Indeed, the only thing for the intuitionist to do is to follow the example of the Italian philosopher who refused to look through a telescope for fear of having his ideas of astronomy upset. An inductive study of the diversities of moral theory and practice, made possible by our modern science of comparative culture, not only destroys at once the old theory of the substantial uniformity of ethical ideals, but even justifies the assertion that there is no crime, recognised by us as such, which has not somewhere and at some time found its place in the catalogue of virtues, and no virtue which has not been officially condemned. Even in extreme cases the statement will be found to hold good. The murderous Fijian's only fear is lest he should not be active enough in slaughter to win the approbation of his gods; with the Egyptian, lying is honourable; the Turkoman's code prescribes theft. Nor when we compare civilised nations with one another do we find the

¹ "Inquiring into the pedigree of an idea is not a bad means of roughly estimating its value" (*The Nebular Hypothesis*).

results less significant. Polygamy, wrong in Europe and America, is right and proper in China, India, and Turkey; while infanticide, a practice that we hold in utter abhorrence, was not only common in Greece and Rome, but was even defended by the greatest ethical teachers of antiquity, Plato and Aristotle, who also held views concerning the relations of the sexes which we should look on as revolting. On any theory of a transcendental God-given sense of right and wrong, these facts present difficulties that, but for the overwhelming influence of preconceived ideas, would at once have been recognised as absolutely insuperable. An attempt has indeed been made to turn the edge of the objection by the contention that, notwithstanding such variations of sentiment and conduct, *some* idea of right and wrong is always present. But this assertion practically abandons the only position in the intuitionist theory that is worth fighting for, since, in the first place, it allows the definite and clear-cut claim originally put forth to lapse into one too vague and indefinite to be of any real service; and, in the second place, it introduces the elements of education and environment—the very elements that the intuitionists are naturally most anxious to keep out of the account. If the conscience is, after all that has been said for it, nothing more than a plastic and capricious faculty, which, instead of being a permanent, infallible, and absolute guide, may be so warped and distorted as to prompt here to theft and there to murder, while in other places theft and murder take rank among the most heinous crimes, then what becomes of the divine voice within us? and wherein is the extra-experiential moral sense one whit more sacred than

any sense that might be acquired? Surely the oracles of God should speak with no uncertain sound, if they are to make good their claim to a divine origin and mission.

These difficulties in the intuitionist theory early presented themselves to Spencer, though not till after he had practically committed himself to that theory in his published work. In the division of the *Principles* dealing with the Inductions of Ethics (where the whole ground of moral divergences is covered in considerable detail),¹ he writes:—

Though, as shown in my first work, *Social Statics*, I once espoused the doctrine of the intuitive moralists (at the outset in full, and in later chapters with some implied qualifications), yet it has gradually become clear to me that the qualifications required practically obliterate the doctrine as enunciated by them. It has become clear to me that if, among ourselves, the current belief is that a man who robs and does not repent will be eternally damned, while an accepted proverb among the Bilochs is that "God will not favour a man who does not steal and rob," it is impossible to hold that men have in common an innate perception of right and wrong.²

Against the orthodox intuitionists, therefore, the utilitarians undoubtedly possessed a strong case, since the old claim concerning conscience as an extra-experiential element of the mind crumbled to pieces the moment it was brought to the touchstone of fact. But, though the labour of destruction was easy, the labour of construction presented perplexities almost as great as those which the intuitionists had found blocking their path. It was one thing to show that the moral faculty could not be regarded as simple, independent, and transcendental; it was quite another thing to present a tenable

hypothesis of its existence, and of the authoritativeness it undoubtedly possesses in the mind of the average civilised man.

Hence, even in the hands of its ablest exponents, the utilitarian theory remained in a crude and unsatisfactory shape. The problem that it sought to solve, though rightly recognised by it as a problem within the limits of scientific investigation, was for the time being beyond the reach of its resources and power. The conscience is not original and independent: true; but, then, whence and how is it derived? That was the knotty question, to which the intuitionists naturally demanded a reply. Bentham, who, though not theoretically the founder of utilitarianism, first endeavoured to make utility the basis of a coherent moral system, was himself no psychologist, and never approached the problems of ethics from the psychological side; but several of his followers, notably the two Mills, saw this vulnerable spot in his armour, and attempted to make it good. The following extract from the younger of the just-named writers will probably give, in brief, the best specimen of the most advanced utilitarian speculation on this important point:—

The internal sanction of duty, whatever our standard of duty may be, is one and the same—a feeling in our own mind; a pain, more or less intense, attendant on violation of duty, which in properly-cultivated moral natures rises in the more serious cases into shrinking from it as an impossibility. This feeling, when disinterested, and connecting itself with the pure idea of duty, and not with some particular form of it, or with any of the merely accessory circumstances, is the essence of conscience; though in that complex phenomenon as it actually exists the simple fact is in general all incrustated over with collateral associations, derived from sympathy, from love, and still more from fear; from all the forms of religious feeling; from

the recollections of childhood and of all our past life; from self-esteem, desire of the esteem of others, and occasionally even self-abasement. This extreme complication is, I apprehend, the origin of the sort of mystical character which, by a tendency of the human mind of which there are many other examples, is apt to be attributed to the idea of moral obligation, and which leads people to believe that the idea cannot possibly attach itself to any other objects than those which, by a supposed mysterious law, are found in our present experience to excite it. Its binding force, however, consists in the existence of a mass of feeling which must be broken through in order to do what violates our standard of right, and which, if we do nevertheless violate that standard, will probably have to be encountered afterwards in the form of remorse. Whatever theory we have of the nature or origin of conscience, this is what essentially constitutes it.¹

In Mill's view, therefore, as in that of the other members of his school, the moral sense arises in each individual as the result of his own experience of the connection between actions and their consequences, intrinsic and extrinsic, immediate and remote. Observation of the direct and indirect pains entailed by certain evil courses of conduct, which we thus learn to avoid altogether, or to follow at our peril, together with the indelible impressions left by education and various environing influences during our early years, enter as most considerable factors into the building up of the complex moral sense; while an equally important, though more subtle, part is played by the principle of association. Pain and wrong action, pleasure

¹ *Utilitarianism*, chap. iii. In their analysis of the conscience the older utilitarians do not seem to have advanced much beyond the point reached by Dr. David Hartley (1705-1757), who introduced into the consideration of the moral sense the important element of association, which he was the first to apply systematically to the general phenomena of the mind.

and right action, are found in interconnection with striking regularity and persistence; whence, in accordance with the well-known psychological law, right and wrong, at first regarded only from the point of view of their consequences, come at length to have a direct power of appeal, and are sought or avoided, loved or hated, for their own sakes. Meanwhile, the abstract idea of rightness and duty is conceived as arising, like other abstract ideas, by generalisation from countless experiences of concrete cases of right and duty; while the sense of coerciveness or obligation at large is interpreted as a result, arising immediately and by association, of the influence exercised upon the growing nature by the rigid discipline and sustained authority of the organised society in which, and the governmental agencies under which, the civilised individual grows to manhood.

Now, it is hardly necessary to point out wherein this alleged explanation, suggestive as it doubtless is, must be regarded as paradoxically insufficient to meet the problem upon its most important side. While recognising to the full the power of education, environment, and association, we still find ourselves unable to understand how, within the lifetime of the single individual, the idea of virtue as a separate, independent, and self-existent conception could ever be generated out of and emerge from the mere personal observation of the persistent connection between certain courses of conduct and certain accompanying results. Serious as is the objection when thus stated, it becomes still more serious when we remember that the specified connection between right action and pleasurable results can scarcely be said to persist within the limits of our own

individual experiences with the constancy and regularity that the argument appears to demand. Could there ever in this way arise such a conception of absolute rectitude as that which Tennyson embodies in the famous lines:

"And because right is right, to follow right
Were wisdom in the scorn of consequence?"¹

Simple or complex, innate or derived, the moral faculty, as we find it in the normal product of civilisation, acts, if not with absolute uniformity, still with an immediateness and average certainty sufficient to make us pause before endorsing any theory that refuses to take us further in the matter than the individual's organised experiences of pleasures and pains. The issue may be dealt with on the grounds of common sense. According to the utilitarian hypothesis, each infant born into the world starts absolutely afresh. The mind is a *tabula rasa*, with no innate ideas, no intuitions of any kind. Upon this the environment is supposed to work; and the simple question is, whether the organisation and registration of personal observations, impressions, and experiences during the comparatively few years of childhood and adolescence can be fairly taken to account for all that we know of the characteristics of the moral faculty as it exists within ourselves in the period of adult life? It is surely not strange that the intuitional school declined to answer this question in the affirmative.

¹ It may be pointed out, however, that even this superb declaration of virtue for its own sake does not invalidate the utilitarian *standard*. Those who think it does so must be required to answer the question whether they would hold any line of action to be "wisdom" which does not, at whatever cost of temporary or personal sacrifice, tend to the good of someone, somewhere, at some time.

The dispute between the two opposed theories of morals may, therefore, be said to have reached a deadlock. Each side had found the weak point in the other's system, while at the same time each failed to secure its own from attack. And now we are in a position to appreciate the flood of new light that was suddenly let in upon the whole controversy by the rise of the doctrine of evolution.

Notwithstanding all the profound differences that separated them, the two older schools possessed a single characteristic in common. Both had based their arguments and formulated their conclusions upon the conceptions of special creation and fixed types; and the discussion, with the full consent of both contending parties, had been in this way limited in range to the experiences of the individual life. Could the conscience ever have arisen after the manner alleged, within the span of the separate mortal career? This was the form that the issue had taken; and to the question in this shape one side had answered Yes, and the other No. Evolution at once widened the issue. Behind the individual it placed the race; behind civilised humanity, the ages of barbarism and animality, out of which, through untold centuries, we have been slowly and painfully struggling upward into higher developments of life. The problem was no longer that of explaining the fine sensitive conscience of the modern adult Caucasian as the outgrowth of a few years of personal intercourse with his environment. The gradually-acquired experiences of countless generations, slowly registered through long periods of social consolidation, and handed down from age to age as slight but persistent modifications in the

nervous organisation of evolving man—these were the new factors which the development theory introduced into the discussion. An explanation which had properly been condemned as absurdly inadequate, so long as attention was confined to the brief terms of a separate life, assumed, immediately that account was taken of the element of hereditary transmission, the appearance of a rational and complete solution of the problem. In merging the life history of each single generation in the life history not only of the human race at large, but of all sentient existence, and in postulating the thread of continuity that, running through almost imperceptible gradations, binds the highest forms to the lowest, the evolutionist at once secured a new standpoint, and escaped the obvious charge of extravagance or specious reasoning. In this way evolution, having, as we have already seen, reconciled the adverse claims of the psychological schools of Locke and Kant, now also stepped forward to make peace between the hereditary foes—the intuitionists and the utilitarians. It showed that in the interpretation of conscience each side had part of the truth, and neither side the whole truth. The moral sense, like what we know as instinct, while innate and extra-experiential in the individual, is acquired and dependent in the race.¹

¹ It is only just to notice that the claim for an original and non-derivative moral sense has been very differently interpreted by different members of the older intuitionist school. Kant, for instance, by far the greatest thinker among them all, distinctly admits, in his *Critique of Practical Reason*, that the moral imperative, conceived by him as transcendental, is transcendental only as to *form*. The *content* is derived. In other words, it gives the general sense of duty or obligation; but for our knowledge of what constitutes right and wrong in any particular

The attitude of the evolutionary moralist, thus made clear, will be made clearer still by the following extract from a letter written many years ago by Spencer to John Stuart Mill, and subsequently published, in part, in the *Data of Ethics* :—

To make my position fully understood, it seems needful to add that, corresponding to the fundamental propositions of a developed moral science, there have been and still are developing in the race certain fundamental moral intuitions ; and that though these moral intuitions are the results of accumulated experiences of utility, gradually organised and inherited, they have come to be quite independent of conscious experience. Just in the same way that I believe the intuition of space, possessed by any living individual, to have arisen from organised and consolidated experiences of all antecedent individuals who bequeathed to him their slowly developed nervous organisations—just as I believe that this intuition, requiring only to be made definite and complete by personal experiences, has practically become a form of thought, apparently quite independent of experience ; so do I believe that the experiences of utility organised and consolidated through all past generations of the human race have been producing corresponding nervous modifications, which, by continued transmission and accumulation, have become in us certain faculties of moral intuition—certain emotions responding to right and wrong conduct, which have no apparent basis in the individual experiences of utility. I also hold that just as the space intuition responds to the exact demonstrations of geometry, and has its rough conclusions interpreted and verified by them, so will moral intuitions respond to the demonstrations of moral science, and will have their rough conclusions interpreted and verified by them.

Careful perusal of the above extract, while it will enable us to understand Spencer's emphatic protest, made earlier

case we have to still to go back to experience. This, of course, is a far less extravagant demand than that made by the average intuitionist, and, indeed, yields half the case to the utilitarian.

in the same letter, against being classed among the anti-utilitarians, will at the same time indicate those important differences which separate him from the older school, and to which we must revert directly. But, beyond this, it brings us round to a point at which we may touch again upon a question already referred to—the question as to how far it is true that the evolutionary theory has introduced any new elements into our ethical considerations. It will be seen that it has actually discarded neither of the two great contradictory doctrines that it found in possession of the field ; and in that sense, if by new we are to understand something absolutely unconnected with previous investigation, it may be urged that nothing new has been brought to light by its application to the problems of morality. But a new theory in science is seldom like a new fashion in dress ; it is rarely more than a modification, or adaptation, or re-interpretation, of some theory or theories already accepted in whole or in part ; and the revelation, when it comes to shake the world, most frequently brings nothing beyond a new attitude, a fresh adjustment of familiar ideas, or a sudden flash of light into some detail hitherto unperceived. The effect of evolution upon the older moral thought is a case in illustration. It came not so much to destroy as to fulfil. For it has placed the doctrines of both the intuitionists and the utilitarians on a new basis and in a new light ; it has harmonised their differences by showing their partial and supplementary character ; and by promulgating a theory of the moral sense which covers all the facts advanced by both sides, while it avoids the difficulties which each had found insurmountable, it has brought the whole

matter for the first time within the range of scientific treatment.

Nor must we overlook the substantial contribution that evolution has made to the discussion of the perennial problem of evil. The existence of this disturbing factor in the moral universe has, more than any other question, agitated the human mind from the time of Job downward, and with the progress of knowledge and the expansion of thought has given rise, in systems of theology and philosophy, to the most ingenious hypotheses and fantastic speculations. Evolution enables us to read at least some meaning and harmony into the turmoil and discord of the world. Here, again, the explanation it offers us is not marked by any absolute originality. Glimpses of the truth that evil is, so to speak, nothing but the friction due to the imperfect adaptation of human nature to social conditions, have from time to time been caught by thinkers of various schools. But their guesses and conjectures were of no scientific value whatever, and were at most nothing but faint adumbrations of that interpretation which the doctrine of evolution makes possible for us by pointing back over the long past history of our race, and tracing out the struggle of the pre-social instinct with the conditions of social life. The modern doctrine of human development, if it leaves the teleology of the subject still involved in the old mystery (since any question of *why* the particular line of progress brought about by evolution was necessary still remains, from the metaphysical side, entirely unanswerable), at all events replaces by a statement of fact and induction the nebulous theories formerly in vogue. The patristic dogma of the fall of man is banished to the limbo of outgrown superstitions, along

with all the Augustinian subtleties founded upon it; and what we have officially called sin, so far from having any supernatural causes or implications, we can now recognise as an inevitable accompaniment of the slow and painful adjustment of the natures of men to the circumstances and requirements of the associated state. The old Adam within us is the Adam of the pre-social stages of human history—the impulses of barbarism, the unrectified egoistic emotions of the dweller in cave and wilderness, which will from day to day burst loose and declare themselves, despite the long discipline to which mankind has been subjected through centuries of progressing civilisation. Every time we give way to such impulses the old barbarian rises within us, and temporarily reasserts his power. Scratch the Russian, and you will find the Tartar just beneath—so runs the proverb; and in the great mass of men the morality of civilisation is as yet hardly more than skin deep. As with the ship in Ibsen's grim and terrible poem,¹ our modern society carries with it a corpse in the cargo—the unbridled elemental passions, the brute instincts, the fierce anti-social tendencies transmitted to us by our far-off ancestors from the days before society and even humanity began.

What new significance is in this way given to the oft-repeated phrase which describes the criminal classes as the failures of civilisation! They are the representatives of the savage left over in the midst of our more developed life, guided by the savage's predatory

¹ *Rhymed Epistle*—a strange production, based upon the sailor's superstitious dread of making a voyage with a corpse on board, and written in answer to the question of a friend as to what is amiss with the present age.

instincts, living in a state of natural enmity with those about them, preying upon their fellows, to whom they offer nothing in return, and thus remaining unintegrated into the great organisation of mutual-dependent parts which constitutes society. "The moral progress of man, as John Fiske epigrammatically put it, is the gradual process of "throwing off the brute inheritance." The law of morality thus becomes more emphatically than ever the law of the higher life; sin is degeneration, atavism, reversion to the pre-social or animal type; and the ethical ideal of evolution, in Tennyson's language, is to

"Move upward, working out the beast,
And let the ape and tiger die."¹

III.

The ethical system of Spencer, then, is hedonistic, or utilitarian, but not in the narrow sense in which the word "utilitarian" was formerly employed. The final criterion, as well as the ultimate end of universal conduct, is still happiness, pleasure, or well-being;² and

¹ *In Memoriam*, § 118. Tennyson, in whose poetry the fundamental conception of evolution continually appears, has given expression to the same thought in other places, notably in his later poems, *The Dawn* and *The Making of Man*. Such phrases as "slaves of a four-footed will" and "the ghost of the Brute that is walking and haunting us yet" are vivid poetic renderings of evolutionary ideas.

² The tendency of language is almost always towards degeneration, and it is sometimes a hard struggle to prevent our ideas from following our speech. It is unfortunate that the word "pleasure" has come to be generally used for the criterion and end mentioned above. The word is objectionable on account of its connotations; the idea called up is too limited in character, and has been seriously vitiated by evil associations. Happiness, though better, is still not wholly satisfactory. Perhaps "well-being," with its wider sweep of meaning and

in the last analysis that course of action, and that course alone, is held to be right which meets this criterion and helps towards achievement of this end. But while the utilitarianism of Bentham and the Mills was merely empirical or inductive, Spencer's utilitarianism is rational or deductive. We must emphasise this difference if we would appreciate the full value of Spencer's ethical teaching, considered on its scientific side.

All the old moral systems have, as we have already intimated, been uniformly characterised by non-recognition of the principle of causation. Whether the position taken was that the revealed will of Deity is the sole ground of duty (as maintained by the theological moralists strictly so called), or that our knowledge of right and wrong can come only through the instrumentality of a supernaturally-given conscience (as taught by the orthodox intuitionists), or that distinction in conduct arises by governmental enactment (as laid down in the political systems of Hobbes and his disciples), the implication was still the same. All these schools, so widely separated from one another at every other point, agree substantially in this: that they regard the rightness and wrongness of actions as qualities not necessarily inherent in the nature of the actions themselves, but impressed upon them by some extraneous and independent authority. Do we know that a certain action is wrong only because of a divine revelation through Scripture or conscience, or because of legislation directed against it? Then the statement implies that we could learn the wrongness of the said action in no other way—not even by observation of

absence of historic taint, is the best word for the purpose.

its results; and this is tantamount to saying that the action has not, in the nature of things, certain invariable consequences. But this leads us at once into an unforeseen dilemma. For if the supposed wrong action does not tend necessarily to produce certain evil consequences—that is, if its wrongness is not inherent, but accidental—then how are we the better off for knowing that it is wrong? The world might go on its way just as well, so far as present things are concerned, in the absence of the supernaturally-revealed or State-given knowledge, and all need for divine or legislative interference forthwith disappears. But if, on the other hand, the divine or legislative interference is supposed to be required because the welfare of the world will be furthered by the knowledge, then this means, if it means anything, that the evil action does tend to produce certain invariable consequences; and if this is so, then why cannot we study these consequences for ourselves, and reach a knowledge of the wrongness of the action by induction, or deduction, or both? Out of this logical labyrinth there seems no way of escape; and the whole difficulty arises from the fact that the necessary tendency of actions is overlooked—from the fact, in other words, that the element of causation in conduct is left out of the account.¹

Now, this weakness in older ethical speculations is precisely what the general nature of those speculations, and the intellectual character of the times in which they originated, would lead us to expect. But we are not so fully prepared to find the same weakness, though

not in so pronounced a form, manifesting itself in the doctrines of the utilitarian school. Yet even in utilitarianism recognition of causation is far from complete.

And here we revert to a statement already made: that the older utilitarianism had not advanced beyond the empirical stage in its treatment of moral phenomena. Its method was that of induction only. When observations of the results of various courses of conduct have been made in numerous cases, and with sufficient care, a generalisation is possible, and the inductive statement is reached that certain actions do uniformly give rise to evil results, while certain others bring with them results of an opposite kind. Inferences from such a generalisation may then be taken as rules of conduct; since actions that have been followed by certain consequences in the countless cases submitted to analysis may fairly be supposed to have in themselves a tendency to produce those consequences. But here utilitarianism stopped. The important step in advance taken by Spencer lies in his attempt to convert the principles of conduct thus reached, from truths of the empirical into truths of the rational order, by showing not only that, as inductively proved, certain actions are habitually accompanied by certain results, but also that it may be deductively proved that in the very nature of things these results *must* go along with them. Only in this way can the element of causation be fully recognised; only in this way, therefore, can we have a science of ethics properly so called.²

A passage in Spencer's letter to Mill,

¹ The line of argument adopted in this and the following paragraphs is worked out in detail in the *Data of Ethics*, chap. iv.

² For Spencer's earliest discussion (interesting in connection with his later arguments) of the utilitarian system, see *Social Statics: Introduction*.

from which we have already quoted, will make the essential point in this discussion sufficiently clear:—

The view for which I contend is, that morality properly so called—the science of right conduct—has for its object to determine *how* and *why* certain modes of conduct are detrimental and certain other modes beneficial. These good and bad results cannot be accidental, but must be necessary consequences of the constitution of things; and I conceive it to be the business of moral science to deduce from the *laws of life and the conditions of existence* what kinds of action necessarily tend to produce happiness and what kinds to produce unhappiness. Having done this, its deductions are to be recognised as *laws of conduct*; and are to be conformed to, irrespective of a direct estimation of happiness or misery.¹

Perhaps an analogy will most clearly show my meaning. During its early stages planetary astronomy consisted of nothing more than accumulated observations respecting the positions and motions of the sun and planets; from which accumulated observations it came by and by to be empirically predicted, with an approach to truth, that certain of the heavenly bodies would have certain positions at certain times. But the modern science of planetary astronomy consists of deductions from the law of gravitation—deductions showing why the celestial bodies *necessarily* occupy certain places at certain times. Now the kind of relation which thus exists between ancient and modern astronomy is analogous to the kind of relation which, I conceive, exists between the expediency-morality and moral science properly so called. And the objection which I have to the current utilitarianism is, that it recognises no more developed form of morality—does not see that it has reached but the initial stage of moral science.

Reproducing this passage in the *Data of Ethics*, by way of general summary of his discussion of the utilitarian standpoint, Spencer adds:—

Doubtless, if utilitarians are asked whether it can be by mere chance that this kind of action works evil and that works good, they will answer, No; they

will admit that such sequences are parts of a necessary order among phenomena. But though this truth is beyond question, and though, if there are causal relations between acts and their results, rules of conduct can become scientific only when they are deduced from these causal relations, there continues to be entire satisfaction with that form of utilitarianism in which these causal relations are practically ignored. It is supposed that in future, as now, utility is to be determined only by observation of results, and that there is no possibility of knowing by deduction from fundamental principles what conduct *must* be detrimental and what conduct *must* be beneficial.¹

Such, then, is the foundation of Spencer's moral system, to the working out of which through the various departments of personal morals and social relationships the remainder of the *Principles of Ethics* is devoted. It will be seen that, upon the philosophic side, his contribution possesses an importance which it would be difficult to exaggerate, since he has at least pointed the way to a reconstruction of ethical theory upon a naturalistic basis; has offered an interpretation of moral development which combines what was true in both the older utilitarian and the ordinary intuitional doctrines; and has pushed beyond mere empirical hedonism to a conception of morality in which right and wrong, while still ultimately resolvable into terms of the bearings of actions upon life, are disengaged from any narrow calculation of results. But while the treatment of the problems of conduct from the standpoint of evolution has thus greatly clarified our theory of morality, the question may still be raised as to whether it has proved of any practical service. Spencer's own reply is contained in the preface to the

¹ *Data of Ethics*, § 21. For a further discussion of the relations between expediency-morality and moral science see the essay on *Prison Ethics*.

¹ The italics are mine.

second volume of the *Principles of Ethics*, and expresses some disappointment :—

The doctrine of evolution has not furnished guidance to the extent I had hoped. Most of the conclusions, drawn empirically, are such as right feelings, enlightened by cultivated intelligence, have already sufficed to establish. Beyond certain general sanctions indirectly referred to in verification, there are only here and there..... conclusions evolutionary in origin that are additional to, or different from, those which are current.

But is this surprising? Certainly not. For apart altogether from the fact that the "right regulation of the actions of so complex a being as man, living under conditions so complex as those presented by a society, evidently forms a subject-matter unlikely to admit of definite conclusions throughout its entire range," the result is one which otherwise we might have been led to expect. The evolution of society has been possible only because little by little the natures of men have been moulded by association into something like conformity with the demands of the social state, and because conduct which makes for well-being has more and more been distinguished as right conduct, receiving the emphasis of those religious, ceremonial, and political codes which have preceded the true moral code, and, by establishing the conditions of harmonious co-operation within the evolving group, have in fact rendered the separate development of that code possible. Hence, the science of ethics, though it may in places correct, qualify, or supplement the principles of conduct otherwise reached, will for the most part only re-state those principles in a somewhat fresh terminology, still further define their bearings, and interpret them more clearly and more emphatically by exhibiting their vital relationships with the evolution of life.

It remains but to add that affiliation of ethical questions upon the general doctrine of evolution leads Spencer to the assertion of some rather striking conclusions concerning the future moral progress of the race. We have seen that one of the fundamental doctrines of the *Synthetic Philosophy* is, that all things are gradually tending towards equilibrium; and as this must hold true in the super-organic no less than in the organic world, it results that the gradual adaptation of the natures of men to their environment cannot cease until between natures and environment a perfect balance has been reached. From the very commencement of social life down to the present time the tendency towards such adjustment has been slowly going on, and it is going on still, moulding the characters of men and women everywhere into more and more complete harmony with the sum-total of the conditions under which they live. What will be the ultimate consequence? "The adaptation of man's nature," Spencer replies,

to the conditions of his existence cannot cease until the internal forces which we know as feelings are in equilibrium with the external forces they encounter. And the establishment of this equilibrium is the arrival at a state of human nature and social organisation such that the individual has no desires but those which may be satisfied without exceeding his proper sphere of action, while society maintains no restraints but those which the individual voluntarily respects. The progressive extension of the liberty of citizens, and the reciprocal removal of political restrictions, are the steps by which we advance towards this state. And the ultimate abolition of all limits to the freedom of each, save those imposed by the like-freedom of all, must result from the complete equilibration between man's desires and the conduct necessitated by surrounding conditions.¹

¹ *First Principles*, § 175.

The ethical corollary of all this, set down though it is in terms of rigidly scientific reasoning, is more optimistic than the brightest dreams of revolutionist or prophet concerning the ideal developments of our race. For this equilibration of emotions and conditions means that at length the adaptation of men's natures to the demands of associated life will become so complete that all sense of internal as well as of external restraint and compulsion will entirely disappear. Right conduct will become instinctive and spontaneous; duty will always be synonymous with pleasure; love will, indeed, be "an unerring light" and "joy its own security," as Wordsworth sang; altruism and egoism will so closely merge that altruism will be simply the highest egoism; and the interests of the individual and of the race will be so completely unified that the promptings and impulses of every moment will minister at once to the immediate and ultimate furtherance of the one and the widest and fullest realisation of the other.¹

¹ In regard to this adjustment of the moral nature to the conditions of life, see especially *Social Statics*, Part I., chap. ii.; *Data of Ethics*, §§ 46, 67, 96, 97; *Inductions of Ethics*, §§ 124, 191, 192.

It is true that in the later years of his life Spencer saw reason to qualify this sanguine prophecy; speaking not, as he had once done, of the "evanescence of evil," but more temperately of its continuous diminution under the discipline of the social state; and, while still believing in a "good time coming," regarding the consummation of moral progress as, at best, very far off.² Yet to the end he looked forward to an "approximately complete adjustment"³ of the characters of men to the conditions of the highest possible human existence, as the goal towards which we are actually, if slowly, moving. The tendency of his philosophy in this respect, then, is distinctly encouraging. The doctrine of evolution, while, in Huxley's phrase, it provokes no "millennial anticipations," still assures us of the substantial reality of moral progress, makes us, therefore, feel that our own efforts count; and, by teaching us at once how little can be done to help the world forward, and yet how well worth while it is to do that little, helps us to combine "philanthropic energy with philosophic calm."³

See *Autobiography*, I., 361; II., 364.

² *Principles of Ethics*, § 244.

³ *Study of Sociology*, chap. xvi.

CHAPTER VI.

RELIGIOUS ASPECTS OF THE SPENCERIAN
PHILOSOPHY

I.

IT is a curious instance of the gratuitous perverseness of popular judgments that, because Spencer was careful to mark out more clearly than any preceding philosopher the limits within which, from the very constitution of our intelligence, all our knowledge must be confined, his system should therefore have been pronounced a system of negations. Pulpits from which there never yet issued a syllable about his positive contributions to thought have rung with denunciations of his agnosticism; general readers who know nothing of the light that he has thrown upon so many of the practical problems and philosophical controversies of the day have their own pronounced ideas of his doctrine of the Unknowable—a doctrine which may, indeed, be said to have taken the place of the old so-called scientific, but really quite unscientific materialism, to which, as we have seen, he himself gave the death-blow, as the red rag of the modern theological world. How strange and wayward and purblind all this is it is hardly needful to point out. The development of the doctrine in question occupies a hundred and twenty pages, or less than a quarter of one volume of the *Synthetic* series—*First Principles*; and the chapters devoted to represent but the clearing of the ground for constructive work, and pro-

perly form no part of the *Synthetic* System itself. Hence, even if we persist in treating the Absolute as a negation—which is precisely what, as we shall see, Spencer himself emphatically refuses to do—it is none the less manifest that to stigmatise the *Synthetic Philosophy* as merely iconoclastic is fundamentally to misconceive its whole character and tendency.

Here we will consider the Spencerian doctrine of the Unknowable not in its purely metaphysical, but in its broadly religious aspects; and we will approach the whole question of what we must predict as the probable future of religion by way of our author's speculations concerning religious development in the past.

The evolutionist, it is almost superfluous to remark, is prevented by his general theory of things from regarding from the popular point of view the highly elaborated theological systems of the world. The relatively pure theism of modern Christianity cannot be accepted by him as an immediate, divine revelation, nor can he consent to draw a hard-and-fast line between this and other great concrete expressions of the religious emotion, or even between this and those extremely low expressions of it which the culture-history of the human race has brought before us in such astonishing variety. All such manifestations, whatever may be their dissimilarities, must

existence and manifestation of power other than those which we describe as natural, and the emotions generated thereby, will be found invariably to distinguish and lie at the bottom of them all. It is such belief and feeling that alone furnish a bond of union between bodies of thought otherwise so dissimilar, for example, as nineteenth-century Christianity and East African fetichism; and, as being the residual qualities which fully and partly developed theologies without exception possess in common, they may be taken to represent the protoplasmic germ from which what, in a somewhat more advanced sense, is specifically called religion has everywhere arisen.¹

Setting out, then, from this conception, we find ourselves confronted by two separate questions. In the first place, whence arose the belief in a mode of existence and power other than our own? And, secondly, given this belief in its crudest form, what was the general course

of its early development? The answers given by Spencer to these questions will be found in his ghost-theory, or theory of the double, and in his doctrine of ancestor worship. All sense of the supernatural, according to his view, may be traced back to the primitive belief in the ghost; and all religious systems whatsoever, arising at the outset from such belief, have passed through the preparatory stage of ancestor-worship on their way to their more complex and highly-developed forms:

II.

The hypothesis formerly almost universally in vogue among those who sought a natural genesis for religious ideas was that early man was led by a sense of wonder and awe to reverence for, and direct personification of, the natural objects connected with his daily life. Sun, moon, earth, winds, sea, so mysterious in their behaviour, so tremendous in their power and influence, were thus supposed to be the objects which, by heightening of the feelings of astonishment and dread, gradually gave rise to the sentiment that we call worship. But poetical as is the theory, and congruous as its alleged experiences unquestionably are with the mental processes of our more developed state, the briefest consideration of the actual facts of the savage mind suffices to show its entire untenability. The primitive man had neither the emotional nor the intellectual tendencies requisite to produce the supposed chain of effects. The familiar sights and sounds of surrounding Nature, suggestive as they may be to the civilised adult, aroused in him no greater feeling of awe than they do to-day in the child or the village clown, who watches the rising and setting of the sun, the waxing

¹ It may be pointed out that acceptance of this definition changes the issue in the old discussion as to the universality of religion. The discussion itself, from first to last, has been mainly one of terminology, the various disputants not being in agreement with one another, and sometimes indeed not with themselves, in regard to what they meant by the language employed. If we are to use the word "religion" only in some higher sense than that given it in the text, then doubtless Lord Avebury is right in concluding that sundry savage tribes have been and are without religion (*Origin of Civilisation*, chap. vi.). Yet it is very questionable whether any one of the tribes referred to by him in confirmation of his statement would be found entirely lacking in some faint sense of a life-power other than their own. Both Spencer (*Principles of Sociology*, vol. i., § 146) and Dr. Tylor (*Primitive Culture*, i. 425) favour the belief that at all events no tribe that has yet been fairly studied has proved to be absolutely deficient in some trace of religious ideas as thus defined.

and waning of the moon, the ebbing and flowing of the sea, without the slightest impulse in the direction of worship. The religious promptings of which we ourselves are conscious as we stand in the presence of such phenomena are not primitive, but distinctively modern,¹ and, instead of helping, stand as obstacles in the way of our understanding of the emotional attitude of early men. So, too, with the intellectual side of the question. The savage accepts the natural changes that go on around him—day and night, summer and winter, tidal ebb and flow—with complete mental indifference, and as matters of course. He, like the ignorant and brutal among ourselves, has no curiosity. He does not speculate concerning them, he asks no questions about their meaning, seeks for no interpretation. He lacks, therefore, the very traits from which any possible system of Nature-worship would have to originate.

What, then, must we conclude? That Nature-worship is not the primordial form of the religious idea, but a developed form of it. Thus we have to ask—if our study of primitive characteristics, emotional and intellectual, forbids our accepting this commonly alleged explanation as the true one—what theory will that study enable us to offer in its place?

"The mind of the savage," says Spencer, "like the mind of the civilised, proceeds by classing objects and relations with their likes in past experience."² But while their minds work in the same way, the experiences which furnish the materials for their mental operations are

entirely different—being in the latter case almost infinitely varied, and in the former extremely few and circumscribed. While, therefore, the civilised adult is able to classify both objects and actions according to their essential likenesses, these being³ often among the least obvious of their characteristics, conspicuous likenesses, which frequently have nothing whatever to do with essential nature, alone attract the savage attention. A single illustration will make this abstract statement clear. According to testimony cited by Spencer, an Esquimaux has been known to mistake a piece of glass for a lump of ice. This error arose not because the mind of the Esquimaux did not proceed in the same way as the mind of an educated European—namely, by classing the new object with what most resembled it in past experience—but because, owing to his small and superficial acquaintance with things, this rough grouping of objects, in virtue of their most manifest external similarities, was the only grouping possible to him.

Passing over the discussion of the general theory of the outer world to which these limitations must necessarily give rise, we will concern ourselves with their influence only in the production of the earliest religious ideas. Consider, then, the interpretation that must be forced upon the mind of primitive man by the familiar personal phenomena of shadows, reflections, dreams. The notion inevitably suggested by them must be the notion of the duality of things. Watching his shadow, the savage becomes convinced that he is attended by a double, sometimes present, sometimes withdrawn. Observation of his reflection in the water strengthens this belief; and in both cases he finds

¹ Any sense of a spiritual relation with Nature is, as the study of literature shows us, of very recent development.

² *Principles of Sociology*, i., § 52.

evidence of the duplication not only of his own existence, but of almost all other existences as well. Knowing nothing of the physical causes of these results, he simply and naturally regards them as appended entities—which, however, possess the differential characteristic that they are visible without being tangible.¹ Hence the initial peculiarities of the double, or shadow, world. With these crude ideas combine ideas arising from the experiences of sleep. In dreams the savage finds himself engaged in activities similar to those of waking life. He hunts, fishes, and feasts, fights enemies, and goes through dangers; and these visionary occurrences are to him just as real as the every-day occurrences which they faintly or vividly resemble. What is the inevitable result? While all these dream-adventures have been taking place, his actual body, as he by-and-by learns from others, has been lying motionless and unresponsive. From this grows up the notion of the wandering double, or other-self, that goes away for a short time in dreams, and for longer periods in fevers, swoonings, and trances; and the identification of this other self with the appended entity, shown in shadow and reflection, is almost certain to follow. In this way develops in complete form the belief in the double or ghost—a belief which the testimony of travellers and missionaries, so far as it has hitherto been carefully sifted and examined, reveals as existing even in savage tribes among whom the

faintest trace or suggestion of any higher religious conception has been looked for in vain.

This belief naturally assumes special proportions in connection with the phenomenon of death. Temporarily withdrawn in sleep, fever, swoon, and trance, the double, or other self, is held at dissolution to take a final departure. Yet, though now permanently detached from the tangible bodily self, to which no effort can recall it, it has not therefore passed into a state of absolute non-existence. It has vanished into the shadow-world, carrying with it most of its earthly characteristics, but becoming gradually endowed none the less with growing suggestions of superadded power. By-and-by the surrounding world is filled with these shadowy doubles—the belief in ghosts thus generated surviving down to our own time in the vulgar dread of dematerialised existences that are supposed to haunt “the glimpses of the moon, making night hideous.”

Observe the natural result. A savage dreams of his dead father, brother, son. How does he interpret such an experience? As the actual visitation of the double or ghost of his departed relative. No other interpretation is, indeed, possible. Out of this springs the first idea of an after-life. But this after-life, as Lord Avebury has pointed out, is at the outset limited and temporary; savages are likely to dream, for the most part, only of the recently dead; and when a deceased friend is no longer dreamed about, he is no longer thought of as still existing.¹ Only later, along with the

¹ Chamisso's well-known story of Peter Schlemihl—the man who sold his shadow—and Lamotte-Fouqué's *Saint Sylvester's Night Phantasy*, in which a person loses his reflection, are playful reminiscences of this primitive belief in the actual reality of shadows and reflections.

² “Ask the negro,” says M. Du Chaillu, “where is the spirit of his great-grandfather? He says he does not know; it is done. Ask him about the spirit of his father or brother who

development of larger religious ideas, does this conception of the temporary after-life expand into the conception of unending after-life, or immortality.

But, meanwhile, belief in the surviving double, or ghost, exercises remarkable influence over the whole of savage life. It originates, in the first place, the practice of ministering to the needs and desires of the spirit. The universal rite of leaving provisions with the corpse finds its explanation here; sometimes, where the double is thought of as material, it is supposed to make use of such provisions in their material form; sometimes the more refined conception is that the ghost makes use only of the spirit of the things offered. Reason is thus also assigned for those continued periodical oblations to the dead of which travellers in different parts of the world have spoken, and which frequently persist, in more or less mutilated shapes, in the higher stages of advancing civilisation. But this is by no means all. In these primitive observances we may recognise the germ of all religious ceremonial. The father of the family, the leader of the tribe, the chief of the clan—men of exceptional prowess and power during life—become after death the objects of special attention. Their utterances in dreams are accepted as

died yesterday, then he is full of fear and terror; he believes it to be generally near the place where the body has been buried, and among many tribes the village is removed immediately after the death of one of the inhabitants." The same belief prevails among the Amazulu Kaffirs, as has been well shown by Mr. Callaway. They believe that the spirits of their deceased fathers and brothers still live, because they appear in dreams; by inverse reasoning, however, grandfathers are generally regarded as having ceased to exist.—Lord Avebury, *Origin of Civilisation*, pp. 238, 239.

commands of unusual importance; their known wishes become the foundations of law; everything is done to retain their favour and to keep them friendly. Hence arises ancestor-worship as a necessary stage in religious evolution. Little by little, along with social consolidation, goes consolidation of these incipient religious ideas. The tribe is dominated by some one man of extraordinary strength and character; success in war attends his guidance, success within the clan follows his counsel. Dying, he assumes a correspondingly important position in the ghost-world—his spirit becomes the tribal god. His grave, and the rough structure raised around it for protection, initiate the temple; ministrations at his resting-place and propitiatory offerings upon the ever-sacred spot give rise to religious sacrifice; appeals to him for continued help are the first prayers; and in the praises of his great deeds, his courage, and his triumphs, recited or chanted within hearing of and to gratify his ghost, we may find the first indications of subsequent temple ritual.

To show how from these germs, *pari passu* with the expansion of thought and the general evolution of the social structure, there gradually grew up systems of feticism, idolatry, Nature-worship, and other primitive bodies of theological thought, with their accompanying cults; and still more to trace from these the slow formation, in their first crude embodiments, of the great concrete religions of the world, would here take us beyond our limits. All this Spencer has done in detail, and with wonderful wealth of illustration. The following points are those which we have here to bear in mind. First, that our present method of interpretation seeks the origin of all

religious ideas, not, according to the common mythological theory, in feelings and speculations about the powers of Nature which are obviously beyond the range of undeveloped thought, but in the savage's inevitable experiences of the duality of his own and other existence ; and that, consequently, all so-called primitive religious ideas are really not original, but derived. Secondly, that the immediate and necessary outgrowth of these experiences was the rise of a universal system of ancestor-worship, which in time originated a more or less complex pantheon of deities—ancestors expanding into gods, and mighty rulers and leaders into gods-in-chief. Thirdly, that all forms of theism, even monotheism itself, are reached by generalisation from earlier ideas, and are only possible when the mind has attained a certain degree of development. And, finally, that the course of evolution here indicated is to be held as marking out the line pursued by every religious system in its earliest stages—in other words, that we see no reason to regard any religion whatever as an exception to this general rule, because in its purified and highly elaborated form it may present no vestigial reminiscences of these primitive stages of its history.

III.

Acceptance of the doctrine of evolution in its application to thought obliges us to acknowledge that in the development of religious, as of all other ideas, there must at every stage be a certain congruity between the beliefs held and the intellectual and moral character of those holding them. If it be true, as has been pertinently said, that "an honest God's the noblest work of man," it is no less true that this noblest work

is only possible to noble natures in a comparatively advanced state of civilisation. An indigenous creed will always evolve in conformity with the average needs of a nation or tribe at any given time, and the changes it gradually undergoes—allowance being made for the subtle influence of interaction between belief and character—will be in keeping with the changing needs ; while where a creed is imported ready-made from without it will inevitably, in so far as it enters into the spiritual life at all, find the level of general character and ideals—a truth never more strikingly illustrated than in the history of proselytising Christianity. And this forces us to recognition of the fact, not altogether easy of acceptance throughout the whole range of its implications, that "the religious creeds through which ^{is} ~~is~~ ^{holding} ~~holding~~ ^{and} ~~and~~ ^{successively} ~~successively~~ pass are, during ^{our} ~~our~~ ^{as} ~~as~~ in which they are severally ^{held} ~~held~~ ^{the best} ~~the best~~ that could be held ; and that this is true not only of the latest and most refined creeds, but of all, even to the earliest and most gross."¹

This principle becomes clearer when we remember that early creeds are everywhere closely fashioned upon the existing social state ; and since the social state is at every stage of its evolution the outgrowth of average needs, the creed itself is but the idealisation and embodiment of those needs, and throws the weight of its influence where for the time being it is most required. A religious conception greatly beyond the medium social demand would also be beyond the reach of the medium intelligence ; though possible to one or two in a generation, it would be impossible to the large majority. Hence, the ideas

¹ "The Use of Anthropomorphism."

formed of divine affairs and divine government are at all times reflections of earthly affairs and earthly government: the divine ideal, in other words, is simply the projection of the particular social ideal then in vogue. Man has all along made God in his own image; and more civilised periods, inheriting the conceptions handed down to them from periods less civilised, find themselves entrusted with the task of modifying these older conceptions to bring them into general harmony with broader and purer ideals. "Ascribed characters of deities," as Spencer says, "are continually adapted and readapted to the needs of the social state. During the militant phase of activity the chief god is conceived as holding insubordination the greatest crime"—as it is then politically considered the greatest offence; he is commonly regarded

as implacable in anger, as merciless in punishment; and any alleged attributes of milder kinds occupy but small space in the social consciousness. But where militancy declines, and the harsh, despotic form of government appropriate to it is gradually qualified by the form appropriate to industrialism, the foreground of the religious consciousness is increasingly filled with those ascribed traits of the divine nature which are congruous with the ethics of peace: divine love, divine forgiveness, divine mercy, are now the characteristics enlarged upon.¹

That all early religious conceptions are absolutely anthropomorphic, both in their positive aspects and in their limitations, is now admitted by all students of culture history; and we may here notice, in passing, the striking harmony of this fact with the general theory of ancestor-worship above outlined. Man was not only the primitive

type of deity, as Dr. Tylor has said; he was the primitive deity; hence necessarily the purely manlike characteristics of all early gods. At first scarcely more intelligent, far-seeing, courageous, or potent than the living savage who ministered to his necessities, the surviving double or ghost only gradually acquired transcendent capacities and powers; even the Jahveh of comparatively speaking so advanced a people as the early Hebrews being for a protracted period still markedly deficient not only in the higher virtues, but also in the higher intellectual qualities. Monotheism, or the conception of a single, all-powerful, ever-present deity, therefore comes at the far end of the evolution of religious ideas; which means, of course, that many popular theological theories, based upon the assumption of man's innate sense of the divine, require fundamental modification. But what we are most concerned to point out here is that, as Spencer has shown in the little essay on "The Use of Anthropomorphism," from which we have already quoted, anthropomorphism, even in its crudest and grossest forms, has had its relative justification, since it has played an important part in the higher development of the race. The savage nature, needing strong checks, can most effectually be controlled by fear of the still more savage deity. The conception must be entirely concrete to enter as a moral motive into his action; and thus even the most repulively diabolical characteristics aid in the production and preservation of restraints, which, not otherwise obtainable, help, like the iron hand and will of the earthly despot, to prepare the way for milder discipline. Something may in this way, therefore, be said even for what Oliver Wendell Holmes called the "diabology"

¹ *Ecclesiastical Institutions (Principles of Sociology, Part VI.), § 656.*

of mediæval theology, and much for many of the harsher elements in the popular religious teachings of our own day. They yield important regulative factors in the lives of those for whom restraints and sanctions derived from more abstract doctrines would have no authority; and they could not be universally swept away, even if that were possible, without the most disastrous results. The only danger is that, through the influence of natural religious conservatism and intellectual vested interests, the old conceptions may survive the period of their beneficial activity. Then they become not aids, but hindrances, to further progress—obstacles in the way of that adjustment to which all evolution tends.¹

¹ Recognition of the average congruity between men's beliefs and their needs must not blind us to the fact that all lower religious ideas are extremely tenacious of life, and tend to persist, with untold influences for evil, in face of advancing civilisation. The task of eliminating the worst features in the body of theological doctrine remaining over from the past is, in some respects, the most important that each generation has to undertake; and how difficult it generally proves is shown by the ever-renewed struggle between so-called heterodoxy and so-called orthodoxy, trials for heresy, and other similar phenomena. It seems to me that Spencer himself was inclined to overlook or underrate this dynamic aspect of the matter, as he was unquestionably inclined to overlook or underrate the dynamic aspect of social evolution in general. Meanwhile there is another thought that may be pertinently suggested. We speak too often of civilisation as if it were a tide rising with something like uniformity all along the shore. We forget that in every country, at every period, stages of civilisation overlap—that there are still to be found among ourselves representatives of every epoch in the world's history, from the age of barbarism down to our own time. Appreciation of this fact should prevent a confusion of issues which, sometimes overtly, sometimes in partly disguised form, will be found to vitiate

IV.

The principle that anthropomorphism lies at the root of all early religious conceptions, interesting as it is for students of culture-history, is here referred to not for its own sake, but for its important implications in relation to the higher progress of theology. For the fact now to be recognised is, that even the most advanced theological systems of the world have not yet fully outgrown this earliest universal stage. Modern Christian theism itself, even in its purest forms, is still anthropomorphic theism—is still substantially an attempt to construct a philosophy of deity on the

most discussions on present-day religious affairs. It is too often assumed to be an objection against a high religious creed that it is not applicable to every class of the community, and particularly that it does not go straight home with regenerating force to the lowest and most degraded characters. Hence, comparisons are instituted in all solemnity between the more refined faiths of cultivated thinkers and the grosser doctrines of certain evangelical schools, and invariably in favour of the latter, because they have succeeded in reaching some whom the more refined faiths in question have never been able to touch! All that needs to be said in answer to this extraordinary argument is that every stage of culture, even in the midst of developing civilisation, must have its corresponding form of religion; but that we object to regard the doctrines that morally prove the most influential in certain cases as therefore possessing the more essential religious vitality. The counterpart to the common error now referred to—an error repeated in many circles with offensive implications—is the scarcely less widely-spread tendency of well-meaning and cultivated men and women to believe in the amelioration of the lowest classes through immediate contact with high religious ideas that properly belong only to the intellectual and moral level of far more developed natures. We can never reiterate too strongly that, in the nature of things, no creed can resemble a patent medicine and suit all cases.

basis of human qualities and human powers.

The history of the slow and painful advance of theology from lower to higher forms has been throughout the history of gradual de-anthropomorphisation.¹ One by one the distinctively manlike characteristics have been dropped from the conception of God, and those remaining have been expanded to more than manlike proportions. These changes, it is almost needless to say, have corresponded with the progress of men towards higher social and individual ideals, and thus we find, as we should expect, that the passions and proclivities first winnowed out and repudiated are those which belong to the stages of barbarism now left behind. The savage trait of cannibalism does not, in the conception of the god, long survive the habit of cannibalism in any tribe, and deception, fraud, and cruelty do not continue to be predicated of deity when truthfulness and mercy come to be recognised as qualities appertaining to higher manhood. "Our doctrinal teachers," wrote Dr. Holmes, "are un-making the Deity of the Westminster Catechism, and trying to model a new one, with more of modern humanity, and less of ancient barbarism, in his composition." At the same time, the limitations of human faculty are broken down in the image formed of the Divine Being. God is thought of no longer only as very powerful, very far-seeing, very good, but as powerful, far-seeing, good, in degrees altogether transcending human possibility—and finally as infinitely so. And now

observe that, as each new step in advance is taken, as one by one the imperfect moral qualities are allowed to lapse, and the conception is ennobled and expanded on every side, every generation looks down upon those who continue to cling to the outgrown ideas with feelings of astonishment, or pity, or disgust. The Christian theist is horrified at the suggestion of the cannibal deity of the Fijians; the modern defender of orthodoxy finds much that is repulsive with little that is admirable in the despotic and tyrannical God of mediæval theology; yet, throughout, the conception is that of idealised humanity. Even in the very loftiest theological teachings this still holds true. The moral qualities are infinitely purified—the intellectual qualities infinitely developed; but the difference is one of degree only, and not of kind. The qualities are human qualities still.

But must we rest here? Is anthropomorphic theism, even in its ultimate form, the final outcome of the religious idea? Is man, too long accepted by himself as πάντων μέτρον, the measure of all things, to set himself up permanently as the type of Deity? Or may we not rather suppose, looking back over the course of religious evolution in the past, and humbly acknowledging the possibility of continued evolution in the future, that mankind may still reach conceptions of the Absolute Reality as much higher and purer and nobler than the now current conceptions of Deity, as these in their turn are higher and purer and nobler than the superstitions of the savage?—that the purgation of the merely human characteristics may still continue, till at length all thought of the manlike shall be entirely banished from our idea of God?—that, in other words,

¹ For this useful, if somewhat formidable-looking, word we are indebted to the late John Fiske.

anthropomorphic theism, when brought to its highest degree of purification, may yet lead the way to religious ideas compared with which all thoughts of Deity that men have hitherto entertained will seem crude and gross.*

We shall best approach these questions from the negative side—by considering first of all the impossibility of continuing to think of the noumenal existence in any terms of human existence, no matter how high and pure these may be.

Theologians, metaphysicians, and all those who have in any way concerned themselves with the ultimate problem of the universe, have agreed to define the First Cause of all things as both infinite and absolute. To this, indeed, they are driven, to avoid becoming entangled in meshes of difficulty and self-contradiction from which there is no escape. But, as a matter of fact, they escape Scylla only to fall into Charybdis. Verbally intelligible though their proposition may appear, it becomes totally unintelligible the moment we press close upon the meanings of the words employed, and endeavour to frame conceptions answering to the phraseology. For, in the first place, how can we think of an absolute cause? Absolute is that which exists out of all relation; while a cause can only be conceived as such in relation to its effect. Cancel the thought of effect, and you cancel the thought of cause. To speak of absolute cause, therefore, is

to attempt to unite the ideas of non-relative and relative—which is manifestly an impossibility. "We attempt," wrote Dean Mansel, whose arguments on this question were freely drawn upon by Spencer, and are here reproduced from the pages of *First Principles*,

to escape from this apparent contradiction by introducing the idea of succession in time. The Absolute exists of itself, and afterwards becomes a Cause. But here we are checked by the third conception, that of the Infinite. How can the Infinite become that which it was not from the first? If causation is a possible mode of existence, that which exists without causing is not infinite; that which becomes a cause has passed beyond its former limits.¹

To pursue this subject further would be to commit ourselves to an unwarrantable digression into the domain of metaphysics. Observing simply that, as here shown, while it is impossible to think of the First Cause as finite and relative, it is equally impossible to frame any conception of it as infinite and absolute, we will pass on to notice that, even waiving these insuperable difficulties, others not less formidable stare us in the face. A large part of dogmatic theology is taken up with the discussion of the "attributes" of God. Yet it is easy to show not only that the various attributes so confidently ascribed to Deity are mutually destructive, and therefore cannot possibly be thought of together, but also that the conception of none of them can be made to combine with the conceptions of infinite and absolute, which for the sake of the argument we will consent for the moment to accept.

The question of the relation of God's "moral character" to his knowledge and his power introduces us to a familiar

* No student of early religious thought can afford to overlook Browning's wonderfully subtle analysis of anthropomorphism in his *Caliban upon Settebo*. Perhaps the only needful commentary upon this extraordinary production is the motto which the poet himself chose for it from the Psalms, and which sufficiently indicates his point of view: "Thou thoughtest that I was altogether such a one as thyself."

¹ *Limits of Religious Thought*, quoted in *First Principles*, § 13.

dilemma of old standing. We can think of a man as being at once very good and very wise and very powerful; but when we attempt to carry these qualities to an infinite degree, and at the same time bear in mind the actual history and condition of the world, we find ourselves entangled in a problem that has already shaken so many noble minds. Evil and suffering exist; they belong, so far as we can see, to the very texture of universal life; and even under the hands of the rhapsodical Mr. Drummond, the history of the evolution of life remains a history of wholesale carnage and cruelty. Now, God must have foreseen all this before the creation of the world, or he cannot be omniscient. But if he foresaw it, he must have been able or not able to prevent it. In the former case, though all-powerful, he cannot be all-good; in the latter, though all-good, he cannot be all-powerful. To think of God, then, as at once all-wise, all-powerful, and all-good is clearly an impossibility. Here is the ancient stumbling-block—the ever-recurring problem which no amount of inquiry into the “purposes of the Creator” has ever yet enabled or ever will enable theology to meet with a satisfactory solution. To reconcile the sin and misery of the world with the infinite power, goodness, and wisdom of a Deity conceived in terms of human powers and feelings, remains to-day, as it has been from the first ages of monotheism, one of the great unread and uncreatable enigmas of speculation. Here we hand it back to the theologians, who have made it their own by pre-emption, and who are indeed responsible for its existence. *Non nostrum tantas componere lites.*

For the whole difficulty, let it be understood, is not, as is too often assumed,

a difficulty created by the blasphemous cavilling of those who refuse to accept, in lieu of explanation, the verbal jugglery of metaphysical special pleading. It inheres in the very nature of anthropomorphic theism; and if blasphemy there be in the matter, the charge lies, as John Fiske very properly pointed out, at the door of those who seek to maintain the anthropomorphic hypothesis. Hence the gain achieved by showing that this hypothesis is untenable. To do this we have to prove that, as above stated, beyond the fact that we cannot combine the ideas of infinite goodness, power, and wisdom in our conception of Deity, lies the further (less obvious but more significant) fact, that no “attribute” whatsoever can possibly be thought of in connection with Absolute and Infinite Existence.

To define God is to deny him, said Spinoza; and the veriest tyro in logic knows that definition involves circumscription. Yet upon definition have theologians from time immemorial expended their subtlest powers, with the result that they have succeeded in producing, in Matthew Arnold's famous phrase, nothing but a non-natural, magnified man. For their definitions are verbal only—they elude us the instant we endeavour to turn them into thought. We are told, for instance, that God is an Infinite Personality. But if we cannot think of an infinite cause, still more clear is it that we cannot think of an infinite personality. Personality implies limitation, or it means nothing at all. To talk of an Infinite Person, therefore, is to talk of something that is at once infinite and finite, unconditioned and conditioned, unlimited and limited—an impossibility. So is it with every quality related to personality. Theology

argues about the will and the purpose of God. Mathematics, as Spinoza long ago protested, might as well discuss the circularity of a triangle. Will and purpose are attributes of the limited and conditioned; they imply an end external to the agent, and a desire on his part to accomplish it. Attempt to attach these ideas to the idea of the Absolute and Infinite, and you will find yourself plunged into a bottomless sea of absurdity. How can there be an end external to the Absolute? and how can the Infinite pass through states of consciousness, constituting the act of volition? Even intelligence or consciousness itself is conceivable only as a relation, and therefore the Absolute cannot be thought of as conscious. Intelligence demands

a conscious subject and an object of which he is conscious. The subject is a subject to the object; the object is an object to the subject; and neither can exist by itself as the absolute. This difficulty..... may be for the moment evaded by distinguishing between the absolute as related to another and the absolute as related to itself. The absolute, it may be said, may possibly be conscious, provided it is only conscious of itself. But this alternative is, in ultimate analysis, no less self-destructive than the other. For the object of consciousness, whether a mode of the subject's existence or not, is either created in and by the act of consciousness, or has an existence independent of it. In the former case the object depends upon the subject, and the subject alone is the true absolute. In the latter case the subject depends upon the object, and the object alone is the true absolute. Or, if we attempt a third hypothesis, and maintain that each exists independently of the other, we have no absolute at all, but only a pair of relatives; for coexistence, whether in consciousness or not, is itself a relation.*

Or, to put the matter in language elsewhere employed by Spencer himself,

"intelligence, as alone conceivable by us, presupposes existence independent of it and objective to it.....To speak of an intelligence which exists in the absence of such alien activities is to use a meaningless word." Hence, the intelligence ascribed to the Absolute Being "answers in no respect to that which we know by the name. It is intelligence out of which all the characters constituting it have vanished."¹

The fundamental assumptions of rationalistic theology are thus, as Dean Mansel concludes, self-destructive. Turn where we will, choose our vocabulary as we may, we must inevitably commit ourselves to endless confusion, so long as we rest in even the highest and purest forms of anthropomorphic theism—so long, that is, as we persist in thinking of the ultimate reality that religion calls God as a *quasi*-human entity, and deceive ourselves into believing that we are gaining anything like a truer and deeper understanding of his nature by ascribing to the Infinite and Absolute Existence qualities and attributes that can have no possible meaning when taken out of connection with the finite and conditioned. Hence it is evident that the further progress of thought "must force men hereafter to drop the higher anthropomorphic characters given to the First Cause, as they have long since dropped the lower."²

It is only necessary to add to this part of the argument that the impossibility, thus made apparent, of defining the ultimate reality in terms of human activities means, of course, the impossibility of defining the ultimate reality in any terms at all. Humanity furnishes us with our highest conception of life.

* Mansell, quoted in *First Principles*, § 13.

¹ *Ecclesiastical Institutions*, § 658.

² *Ibid.*

That the infinite universe contains forms of existence transcending ours in inconceivable ways and in almost infinite degrees is, beyond question, a rational supposition ; but any attempt to image such superior forms must still be circumscribed by what we know of intelligence in the highest manifestations in which it has yet been revealed to us. We cannot in the nature of things get rid of our own limitations ; wander where it will, our imagination must still be tethered fast to our own conditions. If, then, passing from the thought of transcendently superior phenomenal existences, which as phenomenal must have a certain kinship with ourselves, to the thought of the noumenal existence, which as noumenal can possess none of the characteristics of the phenomenal, we find inevitably that our human nature furnishes us with no kind of standard, criterion, or point of departure ; we are bound to realise that no standard, criterion, or point of departure is possible to us. If the highest that we know leaves us without help in our effort to conceive that which an infinitely superior phenomenal intelligence would still be as far from apprehending as ourselves, then it is clear that the enterprise itself has to be relinquished. And thus, by noting the failure which must of necessity follow every attempt to frame a conception of the ultimate reality, we are led round to the great truth made clear the moment we recognise the relativity of all our thinking—the truth, namely, that all conception of Absolute Being is for ever beyond our grasp.

V.

Here, then, we have established certain negative conclusions. We have seen, in the first place, that, according to the doctrine of evolution, we cannot regard

man as possessing an innate, transcendental sense of Deity, and that we must, therefore, seek a natural genesis for religious as for all other ideas. One current hypothesis is thus overthrown. In the second place, we have found that the progress of religious thought has largely consisted in the gradual elimination of anthropomorphic elements from the idea of Deity, and that this elimination must go on until all human or *quasi*-human attributes are entirely expunged. Accepted theological teachings in regard to the personality and character of God are thus shown to belong to a lower stage of religious thought—a stage already partly, and presently to be entirely, outgrown.

But, fortunately, we do not have to rest in these emphatic repudiations of so much that seems most sacred in our modern heritage of thought. There is a positive as well as a negative aspect to our whole argument—a constructive as well as destructive side. To this we will now turn.

That larger charity, which is one of the most striking results of evolutionary habits of inquiry, has taught us to recognise not only “the soul of goodness in things evil,” but also the soul of truth in things erroneous. We no longer discard as absolutely and entirely without foundation even the strangest and most grotesque ideas that have ever gained foothold in the thoughts of our race. Absurd as they may seem to the superficial or careless observer, the mere fact that they have existed and have held their own may be taken to prove that they originally “germinated out of actual experiences—originally contained, and perhaps still contain, some small amount of verity.”¹

¹ *First Principles*, § 1.

If this is true in regard to beliefs in general, especially must it be held to be true in regard to such beliefs as have given evidence of unusual and persistent vitality. It was a cheerful doctrine of the old theology, that if a thing were pleasant it was, therefore, certain to be wrong; whence, by analogy, it might be assumed that the more widespread an idea, the less chance there would be of its embodying any nucleus of reality. But, from the standpoint here adopted, this atrabilious supposition is shown to lack foundation. For, when any belief has become deeply embedded in human nature, when it resists modifications of fashion and thought, and holds its ground in perennial strength amid all the intellectual and moral upheavals of the ages, we see reason to infer that it does so because, whatever may be its encumbrances and adulterations of error, it contains some core of essential truth. Now, suppose that, recognising this trait of universality and persistency in a given belief as *prima facie* evidence of its possessing a strong basis of verity, we observe that it is not only very general and very stable, but also that it is a constituent element common to many otherwise conflicting systems of thought—what is the inference that we are compelled to draw? The inference, surely, that, generated among different men under almost infinitely varied conditions, caught up by and preserved in creeds and philosophies having scarcely another point of similarity, and enduring amid the most sweeping changes and far-reaching developments of thought, this belief must hold some kernel of truth of supreme importance—must shoot out some tendrils running far down into the deepest subsoil of human life and experience.

Bearing this in mind, we may revert to a point already dealt with. In seeking for the broadest possible definition of the religious idea, we concluded that in the last analysis that idea would everywhere be found to depend upon the sense of an existence other than the existence which we describe as natural. Belief in a mode of life and power other than our own—in a “something not ourselves,” the influence of which is none the less felt through all our existence—is, therefore, the central belief around which all concrete forms of religion have gradually accumulated; it is the belief which all such concrete forms, whatever may be the diverse courses of their evolutions, continue to hold in common; it is the residual element left when all their differences are cancelled and all their antagonistic factors thrown aside. Almost if not quite universal, and obstinately persistent, it is therefore the belief that, however much it may be distorted or disguised, must be taken as embodying the largest and most important truth. Now, all religious systems have built upon the foundation furnished by this belief a theory of explanation—a philosophy—of the universe; recognising one and all, from lowest to highest, that a mystery lies at the heart of things—a mystery from the overwhelming sense of which there is no possibility of escape. And what, in regard to this universal recognition of the problem of the universe, has been the course of the evolution of religious thought? Every stage in advance has only served to bring the sense of mystery into more conspicuous relief. Earlier interpretations, shown by wider knowledge and larger outlook to be insufficient, are discarded or modified; hypotheses framed by one generation are seen by the next generation to be

untenable; until at length the inevitable goal of the whole movement comes within sight, and the most thoughtful inquirers begin to realise that the mystery of which all the creeds have sought an explanation is a mystery for which no explanation can ever possibly be found. Thus, however much religious systems may differ from one another in their suggested solutions of the problem of life, and from that most developed philosophy which, conscious that every hypothesis that ever has been or ever can be framed concerning it is untenable, declares the problem itself to be insoluble, they are at one upon the supreme point, that the mystery is there. This is a truth "respecting which there is a latent agreement among all mankind, from the fetish-worshipper to the most stoical critic of human creeds."²

In endeavouring to trace the natural history of the religious idea we throw no discredit, then, upon that idea in its higher developments, any more than we throw discredit upon the moral idea in its higher developments by following that down to its crudest forms. We recognise, of course, that man in the beginning was potentially religious, as he was potentially intelligent, and potentially moral. Given this potentiality, our business is simply with the *growth* of the religious idea; in studying which we find, in all its changes and ramifications, some vital germ of truth. Here, as in the case of the moral sense, it is difficult to see what advantage the advocates of supernatural origin can possibly claim over those against whose theories of a natural origin they so fiercely protest. Indeed, the advantage is rather on the other side, since, as Dr. Fairbairn has

pointed out, the supernaturalistic theory implies that man must have had what Schelling called "an original atheism of consciousness."

Thus we have two permanent elements in religious thought: the belief in a mode of life and power other than our own, and a sense of the ultimate mystery of the universe; the former of them being used as a key to the latter. We have seen that the inevitable tendency of religious development is to make this mystery more apparent. Let us now inquire into the evolution of the other element—that idea of an existence not our own, upon which all religious interpretations of the origin and meaning of the universe have been based.

The following extract from Spencer's *Ecclesiastical Institutions* (§ 659) will serve our purpose much better than any words of our own:—

Every voluntary act yields to the primitive man proof of a source of energy within him. Not that he thinks about his internal experiences; but in these experiences this notion lies latent. When producing motion in his limbs, and through them motion in other things, he is aware of the accompanying feeling of effort. And this sense of effort, which is the perceived antecedent of changes produced by him, becomes the conceived antecedent of changes not produced by him—furnishes him with a term of thought by which to represent the genesis of these objective changes. At first this idea of muscular forces as antecedent unusual events around him carries with it the whole assemblage of associated ideas. He thinks of the implied efforts as efforts exercised by beings like himself. In course of time these doubles of the dead, supposed to be workers of all but the most familiar changes, are modified in conception. Besides becoming less grossly material, some of them are developed into larger personalities presiding over classes of phenomena which, being comparatively regular in their order, suggest a belief in beings who, while far more powerful than men, are less variable in their modes of action.

So that the idea of force as exercised by such beings comes to be less associated with the idea of a human ghost. Further advances, by which minor supernatural agents are merged in one general agent, and by which the personality of this general agent is rendered vague while becoming widely extended, tend still further to dissociate the notion of objective force from the force known as such in consciousness; and the dissociation reaches its extreme in the thoughts of the man of science, who interprets in terms of force not only the visible changes of sensible bodies, but all physical changes whatever, even up to the undulations of the ethereal medium. Nevertheless, this force (be it force under that statical form by which matter resists, or under that dynamical form distinguished as energy) is to the last thought of in terms of that internal energy which he is conscious of as muscular effort. He is compelled to symbolise objective force in terms of subjective force from lack of any other symbol.

See, now, the implications. That internal energy which in the experiences of the primitive man was always the immediate antecedent of changes wrought by him; that energy which, when interpreting external changes, he thought of along with those attributes of a human personality connected with it in himself—is the same energy which, freed from anthropomorphic accompaniments, is now figured as the cause of all external phenomena. The last stage reached is recognition of the truth that force as it exists beyond consciousness cannot be like what we know as force within consciousness; and that yet, as either is capable of generating the other, they must be different modes of the same. Consequently, the final outcome of that speculation commenced by the primitive man is that the Power manifested throughout the universe distinguished as material, is the same Power which in ourselves wells up under the form of consciousness.

Little comment upon this passage is called for. The sense of a mode of life and power other than our own, which, as we have seen, has from the first been taken as the clue to the arcanum of the universe, necessarily arises under an anthropomorphic form, and under this form continues to persist

through all the less developed stages of thought. Meanwhile, the tendency to de-anthropomorphisation little by little modifies all the earlier religious conceptions by depriving them one by one of their human and *quasi*-human characteristics, beginning with the lower, but gradually passing onward to the higher; until finally, through continuance of the same tendency, all such characteristics will disappear. When this has at length taken place, there will be nothing left in thought but the permanent and inexpugnable sense of the power of which all the phenomenal universe is but the transient expression—the reality that underlies it all. Thus the conception of the life not ourselves—the life out of which all existence arises, and by which it is sustained—just as it has been enlarging from the very beginning, “must go on enlarging, until, by disappearance of its limits, it becomes a consciousness which transcends the forms of distinct thought, though it for ever remains a consciousness.”¹

All this is surely a sufficient answer to those who maintain that Spencer's doctrine of the Absolute is merely a negation. On the contrary, for him it is the highest possible affirmation. Unknowable in itself, the noumenon—the reality behind phenomena—is still the foundation of all our knowledge. Whatever else may be doubted, this at least can never be called in question. It is the one inexpugnable element in consciousness, left over in the last analysis as the ultimate, inexplicable, indestructible first principle of thought. Obliterate it, and the whole fabric of our knowledge would crumble to nothing.²

¹ *Ecclesiastical Institutions*, § 658.

² *First Principles*, § 26.

VI.

To recapitulate. Stating the matter broadly, and in the first place regarding only its negative aspects, we have seen that the Spencerian doctrine cuts the ground directly from beneath all forms of anthropomorphic theism, in which God appears as "Man's giant shadow, hailed divine."^{*} There are low and high forms of such theism, varying all along the line from that of the Fijian, who pictures his gods as cannibals as brutal and bloody as himself, to that of so refined and subtle a thinker as Dr. Martineau, who talks of the "character of God" and "the order of affections in Him"; but, be their differences otherwise what they may, they correspond in their ascription to the Absolute and Infinite Power of traits and characteristics having purely relative and finite connotations. But it is now clear that even the highest form of anthropomorphism is, philosophically considered, without justification. All our knowledge is limited to phenomena; and when, from dealing with phenomena, we pass on to think or speak of that which is not phenomenon, but reality, we are bound to think and speak in terms which necessarily lose all exact meaning in the transfer. Will, intention, foresight, personality, purpose—we know what these signify when applied to creatures conditioned like ourselves; applied to the Unconditioned, they are empty words, having no meaning at all, or meanings which involve countless absurdities and contradictions. "To think that God is, as we can think him to be, is blasphemy"—such is the conclusion to which we are ultimately forced. However vast, however deep,

our knowledge of the phenomenal universe may hereafter become, it is that phenomenal universe which must for ever oppose an adamant barrier to our thought. Science may press forward in every direction, and open up vistas of which at present we do not even dream; but her ever-widening circle will only bring us into larger touch with the nescience that lies beyond. The dividing line between appearance and reality can never be passed, no matter what achievements of insight and genius and knowledge the future ages may hold in store; and for all mankind, as for us, the eternal and ever-working power revealed to us only in its manifestations must still remain beyond definition, beyond even conception.

But happily our philosophy brings a message of promise as well as a message of discouragement. In his controversy with Mr. Frederic Harrison, some years ago, Spencer very properly called his brilliant antagonist to task for loudly applauding the irreparable defeat which theology had sustained at his (Spencer's) hands, while refusing to acknowledge the services he had rendered to religion by showing the essential germ of truth which, whatever its errors and divagations, every theology contains. The whole discussion only served to emphasise in many minds the feeling that it is not a little unfortunate that Spencer should have made such prominent use of the word "unknowable," not because his meaning is not perfectly plain to the careful student of Part I. of *First Principles*, but because he has thus left a loophole for what has been well described as some of the dreariest twaddle which has been given to the world under the name of philosophical discussion since the days of mediæval

* William Watson, *The Unknown God*.

scholasticism. For the word "unknown" has allowed the adverse critic to assume, and to build a whole superstructure of argument upon the assumption, that Spencer's doctrine of the Absolute is a vacuum—a mere negation of thought. So far from this being the case, we have shown that, for the Spencerian, the truth that behind all we know and can know, eluding thought and transcending imagination, there is the one Eternal Reality, is the corner-stone of all our knowledge—the one fact that can never be either analysed or got rid of. And here we may notice how, in this final datum of consciousness, religion and science find their complete and permanent reconciliation. For the supreme and everlasting power which religion calls God is the eternal and inscrutable energy which science finds at the back of its widest generalisations and beneath its deepest investigations. All science leads at last to the mystery with which all religion begins. Science, indeed, speaks of that mystery in language which is formal and colourless, for its statements are purely intellectual. But translated into the language of the emotions, its ideas become deeply religious.*

It is true that all this means the inevitable sacrifice of many of the ideas now most deeply embedded in the current creeds. It is true that it compels us to look for a more and more complete purgation from the conception of Deity of all human attributes; since to speak of the Divine will, or a Personal Creator, or an

intelligent Governor of the universe, is, from the standpoint of philosophical exactness, scarcely more admissible than to go back at once to the quaintly man-like images of the early Hebrew Scriptures. It is true that it forces us to realise with ever-increasing vividness how little all our feeble guessings must be worth in face of the Great Enigma, since, as the choice lies, not between personality and something lower, but between personality and something inconceivably higher, we are probably incalculably further from the truth when we speak of the Infinite and Absolute in terms of human emotion and human intelligence than we should be if we attempted to describe human emotion and human intelligence in terms of a plant's functions. But all this notwithstanding, and though we are forced to admit the futility of all the efforts of all the theologies to formulate that which is forever beyond formulation, we are not therefore to suppose that we are left without touch upon the Unseen and Eternal, or that there is no kinship and no communion between our spirits and the Source and Sustainer of all things—"the Power in darkness whom we guess." Given the ultimate Reality—the great central fact of consciousness—and we are bound to conceive of that Reality, not, indeed, as personal and conscious in the strict meaning of these words, but still as the power which is manifested in personality and consciousness in ourselves; personality and consciousness being modes in which the Eternal Energy expresses itself in us by reason of the fact that we are conditioned by that which is not ourselves. Thus, seeing our human necessity to give some form to our conceptions, and our human inability to find any form higher than

* To prevent misapprehension, I may add that I do not myself rest in this somewhat blank form of reconciliation between science and religion. But I content myself here and in what follows with indicating merely what appear to me to be the immediate implications of Spencer's own thought.

the highest within ourselves, we may even allow ourselves to carry the ideas of personality and consciousness with us in our thought of the ultimate Reality, and I hold that we are justified in so doing, if we bear ever in mind the one supremely important qualification that our language does not *define*, but *symbolise*, and thus avoid the danger of passing from symbolism, which is defensible, to definition, which can lead to nothing but the confusion of empty dogmatism, and the ignorance which mistakes itself for knowledge.¹

Does this seem, after all, to be offering little in place of that which is taken away? To the present generation this must needs perhaps be so. Men move with difficulty from concrete image to abstract statement. The religious progress of the world has been like the slow ascent of a man up a sheer perpendicular cliff—every new foothold upward has been carved out and graven deep with infinite labour and countless tears. The thought a little in advance of the emotional grasp of each era has to that era necessarily seemed chilling and repulsive—it has lacked the warmth, the glow, the appealing power, which are possessed only by ideas long steeped in the

feelings. No wonder, then, that when his anthropomorphic error had been proved to him, the old monk Serapion should have cried aloud in all the agony of his despair, "You have robbed me of my God!" No wonder that in the hour of unspeakable craving Luther's wife should have exclaimed against the coldness and hardness of her new creed. This must necessarily be the cry of many in every period of transition from lower to higher thought in the future, as it has already been the cry of many during every such crisis in the past. Every movement forward out of familiar forms and feelings has inevitably been attended by some wrenching of the religious nature; and not without still further agitation and upheaval shall we pass at length out of anthropomorphic theism altogether into that cosmic theism to which the long course of religious evolution has from the very first been slowly leading us. In the development of thought, as Professor Clifford pointed out, the feelings can never quite keep pace with the intellect—a truth which throws a flood of light upon the religious crisis of our own day. When the existing balance between knowledge and emotion is disturbed by the discovery of fresh truth, the intellect will readily adjust itself to the new conditions, while the emotions cling tenaciously about the things that are being left behind. Thus, while intellectually we may seize and appropriate those vast cosmical ideas which the wider knowledge of our time is yielding us in place of the simpler and cruder imaginings of the past; while we may even realise more or less clearly that these new ideas are in themselves infinitely more impressive, more awe-inspiring, more truly religious, than any that have been possible to mankind hitherto; yet until these

¹ For myself I go with Fiske when he says: "I do not hold.....that we are justified in using such an expression as 'infinite personality' in a philosophical inquiry, where clearness of thought and speech is above all things desirable. But I do hold most emphatically that we are not debarred from ascribing a *quasi*-psychical nature to the Deity simply because we can frame no proper conception of such a nature as absolute and infinite." It must be remembered (though it is too often forgotten) that, unless we cease to think altogether, we *must* think anthropomorphically; and, as Dr. Martineau rightly protested, materialism as a theory of things is quite as anthropomorphic as the current theism.

ideas can grow sacred to us through habit and association, until they can sink down into our feelings and dwell there, and become saturated with the finer atmosphere of our thought, they will be little to us but the abstractions of philosophy. That the mass of men will progress far in the difficult task of thus incorporating them and making them their own, in our time, or for many generations to come, can hardly be supposed. But that adjustment of emotion to knowledge, which is a constant accompaniment of evolving life, will in time vitalise and spiritualise these new and now strange concepts of our philosophy—perhaps more rapidly than some of us are apt to imagine.

'The common problem—yours, mine, every one's,

Is—not to fancy what were fair in life
Provided it could be—but finding first
What may be, then find how to make it fair
Up to our means—a very different thing."

And the religious problem of the race at large is similar to this. The emotions of each generation, adjusted to the average knowledge of that generation, cannot but receive a rude shock when some new scientific revelation sweeps away their old foundations, and thus shatters the ancient bases of religious faith. At such a crisis what is to be done? Nothing, but to accept the new truth in all humility, and, in the firm trust that the further evolution of thought will presently lead to the complete reharmonisation of knowledge and feeling, to set our faces resolutely towards the light. The true religious teacher in such a transitional period is, therefore, not the man who enters the battlefield of thought to fight for the knowledge of yesterday against the knowledge of to-day; but rather he who,

gifted with prophetic vision, is the first to enter sympathetically into all that science reveals concerning the order of the universe, and to proclaim its religious bearings to a world that, for the time being, it has blinded "by excess of light." Would that our preachers and theologians could only thus realise their privileges and their responsibilities, and from the history of the many epochs of dire struggle and confusion through which, amid darkness and despair, men have in the past been carried forward, as on a tidal wave, to higher levels of thought and feeling, could but catch the inspiration of a larger faith in what the future holds in store! Meanwhile, it is to the great poets particularly that we have to look for help. In the following magnificent lines of Wordsworth, for example, we may perhaps read the promise of a near and complete translation of the religious ideas which we have been here trying to interpret—the ideas of an Eternal Power manifesting itself through the order of Nature, and of the essential unity of all life—out of the language of science into the language of the feelings—the natural language, be it ever remembered, for all religious faith and aspiration:—

"I have felt

A presence that disturbs me with the joy
Of elevated thoughts; a sense sublime
Of something far more deeply interfused,
Whose dwelling is the light of setting suns,
And the round ocean and the living air,
And the blue sky, and in the mind of man:
A motion and a spirit that impels
All thinking things, all objects of all thought,
And rolls through all things."¹

¹ *Lines Composed a few Miles above Tintern Abbey*, 1798. This superb passage, together with such poems as Tennyson's *Ancient Sage* and *Akbar's Dream*, may be profitably compared with those passages in *The Task* in which Cowper gave expression to the mechanical

Of one thing at least we may rest assured. As each larger thought of the universe has at length been absorbed into the emotions, and as from the vantage-point then reached men have looked back and seen their older conceptions in all their limitations and crudity ; so will this largest thought yet brought upon our horizon be also emotionally appropriated ; and so, also, when this has been done, will men realise how imperfect were all the ideas belonging even to the highest stage of anthropomorphism. Then, indeed, will the religious emotions, harmonising with a wider, truer, and deeper knowledge of the Cosmos, and a fuller and profounder sense of the Reality of which the universe is but the fleeting manifestation, as much transcend the religious emotions of our own day as do these the

theism of Paley and his school. Such a comparison enables us to appreciate the real advance that we have made towards an emotionalisation of the new thoughts of science concerning the universe and the final mystery of life.

religious emotions of the fetich-worshipping savage. Nor can the future progress of science do otherwise than strengthen and enlarge them. As knowledge grows "from more to more," so will "more of reverence in us dwell," and the choral harmonies of knowledge and feeling in the time to come will be richer and vaster than the broken music of the past. For with every fresh exploration through a universe which is literally pulsating with life—a universe "boundless inward in the atom, boundless outward through the whole"—one truth will rise into ever greater distinctness, and fill a larger and larger place in the minds of men. For amid all the "mysteries which become the more mysterious the more they are thought about, there will remain the absolute certainty" that we are "ever in presence of an Infinite and Eternal Energy, from which all things proceed." Here Science finds with Religion the ultimate and everlasting Fact of facts.

APPENDIX

CHRONOLOGICAL LIST OF SPENCER'S WRITINGS

- [THE more important of Spencer's magazine articles, and of his shorter separate publications, are contained in the Library edition of his *Essays*, Scientific, Political, and Speculative, issued by Messrs. Williams & Norgate. The volume numbers added to various of the following titles refer to this collection.]
- 1842. *Letters on the Proper Sphere of Government.*
 - 1844. *Remarks on the Theory of Reciprocal Dependence in the Animal and Vegetable Creations* (Philosophical Magazine, February. Republished in *Autobiography*, vol. i., Appendix F).
 - 1847. *The Form of the Earth no Proof of Original Fluidity* (Philosophical Magazine, March. Republished in *Autobiography*, vol. i., Appendix J).
 - 1850. *Social Statics.* (Selections from this work were published along with a new edition of *The Man versus The State* in 1892.)
 - 1852. *Theory of Population.* (Afterwards developed in Part VI. of *The Principles of Biology.*)
Use and Beauty (vol. ii.).
The Development Hypothesis (vol. i.).
The Sources of Architectural Types (vol. ii.).
Philosophy of Style (vol. ii.).
Gracefulness (vol. ii.).
A Theory of Tears and Laughter (Leader ; December 11th.)
Use of Anthropomorphism.
 - 1853. *Over-Legislation* (vol. iii.).
Valuation of Evidence (vol. ii.).
The Universal Postulate. (Afterwards embodied in *The Principles of Psychology*, Part VII., chapter xi.)
 - 1854. *Manners and Fashion* (vol. iii.).
The Genesis of Science (vol. ii.).
The Art of Education. (Now forming chapter ii. of the work on Education.)
Railway Morals and Railway Policy (vol. iii.).
Personal Beauty (vol. ii.).
 - 1855. *Principles of Psychology* (first edition).
 - 1857. *Progress : its Law and Cause* (vol. i.).
Origin and Function of Music (vol. ii.).
Transcendental Physiology (vol. i.).
Representative Government (vol. iii.).
 - 1858. *State Tamperings with Money and Banks* (vol. iii.).
Moral Education. (Now forming chapter iii. of the work on Education.)
The Nebular Hypothesis (vol. i.).
Archetype and Homologies of the Vertebrate Skeleton.
 - 1859. *The Laws of Organic Form.* (Afterwards developed in Part IV. of *The Principles of Biology.*)
Physical Education. (Now forming chapter iv. of the work on Education.)
What Knowledge is of most Worth? (Now forming chapter i. of the same work.)
Illogical Geology (vol. i.).
The Morals of Trade (vol. iii.).
 - 1860. *Bain on the Emotions and the Will* (vol. i.).
The Social Organism (vol. i.).
The Physiology of Laughter (vol. ii.).
Parliamentary Reform (vol. iii.).
Prison Ethics (vol. iii.).
 - 1861. *Education : Intellectual, Moral, and Physical.* (Cheap reprint by the Rationalist Press Association, 1903.)
 - 1862. *First Principles.* (Sixth and final edition, 1900.)
On Laws in General and the Order

- of their Discovery (vol. ii.). (A chapter from the first edition of *First Principles*, omitted from the reorganised edition.)
1864. What is Electricity? (vol. ii.). Classification of the Sciences (vol. ii.). Reasons for dissenting from the Philosophy of M. Comte (vol. ii.). (First published as an appendix to the just-named article.)
1865. The Collective Wisdom (vol. iii.). Political Fetishism (vol. iii.). Mill *vs.* Hamilton—The Test of Truth (vol. ii.).
1866. On Circulation and the Formation of Wood in Plants (Transactions of the Linnæan Society, vol. xxv. Republished in *Principles of Biology*, vol. ii., appendix C.).
1867. *First Principles* (remodelled). *Principles of Biology* (two volumes). (Revised and enlarged edition, 1898, 1899.)
1870. Origin of Animal Worship (vol. i.).
1871. Specialised Administration (vol. iii.). Morals and Moral Sentiments (vol. i.).
1872. *Principles of Psychology* (enlarged edition, two volumes). Mr. Martineau on Evolution (vol. i.).
1873. The Study of Sociology. (International Scientific Series.)
Obituary Notice of J. S. Mill (Examiner, May 17th. Republished in *Autobiography*, vol. ii., appendix G).
Replies to Criticisms (vol. ii.). (Mainly on the doctrines of *First Principles*.)
1875. Note to Professor Cairns's Critique on the Study of Sociology (Fortnightly Review, February).
1876. Comparative Psychology of Man (vol. i.).
1877. *Principles of Sociology*, vol. i. A Short Rejoinder [to J. F. McKen-
nan] (Fortnightly Review, June).
1879. Ceremonial Institutions. (Part IV. of the *Principles of Sociology*.)
The Data of Ethics. (Part I. of The *Principles of Ethics*.)
1881. Professor Green's Explanations (vol. ii.). (Replying to strictures on The *Principles of Psychology*.)
1882. Political Institutions. (Part V. of The *Principles of Sociology*.)
The Americans: A Conversation and a Speech (vol. iii.).
- Professor Goldwin Smith as a Critic (Contemporary Review, June).
1884. The Man *versus* The State. Retrogressive Religion (Nineteenth Century, July).
Last Words about Agnosticism and the Religion of Humanity (Nineteenth Century, November).
1885. Ecclesiastical Institutions. (Part V. of The *Principles of Sociology*.)
A Rejoinder to M. de Laveleye (Contemporary Review, April).
1886. The Factors of Organic Evolution (vol. i.).
Principles of Sociology, vol. ii.
The Ethics of Kant (vol. iii.).
1890. Absolute Political Ethics (vol. iii.).
The Moral Motive (Guardian, August 6th. Republished in *Principles of Ethics*, vol. ii., appendix C.).
1891. From Freedom to Bondage (vol. iii.). (First published as an introduction to a collection of anti-Socialistic essays entitled *A Plea for Liberty*.)
Justice. (Part IV. of The *Principles of Ethics*.)
1892. The Inductions of Ethics—The Ethics of Individual Life. (Parts II. and III. of The *Principles of Ethics*.)
1893. The Inadequacy of Natural Selection. (Republished in appendix to vol. i. of revised edition of The *Principles of Biology*.)
Negative Beneficence — Positive Beneficence. (Parts V. and VI. of The *Principles of Ethics*.)
A Rejoinder to Professor Weismann. Evolutionary Ethics (Athenæum, August 5th. Republished in Various Fragments).
1894. The late Professor Tyndall (Fortnightly, February).
1895. Mr. Balfour's Dialectics (Fortnightly, June).
Lord Salisbury on Evolution (Nineteenth Century, November).
1896. *Principles of Sociology*, vol. iii. Against the Metric System. (Reprinted in Various Fragments.)
The Relations of Biology, Psychology, and Sociology (Popular Science Monthly, December).
1897. Various Fragments.
The Duke of Argyll's Criticism (Nineteenth Century, May).

1898. What is Social Evolution? (Nineteenth Century, September).
 1899. Professor Ward on "Naturalism and Agnosticism" (Fortnightly, December).
 1902. Facts and Comments.
 1904. An Autobiography (2 vols.).

To the above list have to be added the eight parts of the Descriptive Sociology, a cyclopædia of social facts collected, arranged, and published under Spencer's supervision. With the issue of the eighth division Spencer announced that, owing to the deficient public

response, the enterprise would have to be abandoned; but, according to the directions and under the provisions of his will, it will now be carried to completion. The published divisions are as follows :—

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INTELLECTUAL, MORAL, AND PHYSICAL

BY

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PUBLISHERS' PREFACE

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IN the preface to the cheap edition of this work, issued in 1878, the author says :—

The growing demand for the original edition of these Chapters on Education has suggested to me the propriety of issuing an edition that shall come within easy reach of a larger public. That the work has had considerable currency in the United States, and that there have been made translations of it into the French, German, Italian, Russian, Hungarian, Dutch, and Danish languages, are facts which have further encouraged me to believe that at home an edition fitted by lower price for wider circulation is called for.

No alterations have been made in the text. In the absence of more pressing occupations I should have subjected it to a careful revision; but rather than postpone tasks of greater importance I have refrained.

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Since then the work has been translated into Spanish, Swedish, Bohemian, Greek, Japanese, Chinese, Sanskrit, Arabic, and Bulgarian.

By the consent of Mr. SPENCER, the RATIONALIST PRESS ASSOCIATION are now able, by issuing this verbatim reprint at a still lower price, to extend the circulation of these essays yet further.

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EDUCATION AT ETON, 1842-5

“ Balston, our tutor, was a good scholar after the fashion of the day, and famous for Latin verse ; but he was essentially a commonplace don. ‘ Stephen major,’ he once said to my brother, ‘ if you do not take more pains, how can you ever expect to write good longs and shorts? If you do not write good longs and shorts, how can you ever be a man of taste? If you are not a man of taste, how can you ever hope to be of use in the world?’ ”

(*The Life of Sir James Fitzjames Stephen, Bart.*, by his brother, Leslie Stephen, pp. 80-1.)

EDUCATION

CHAPTER I.

WHAT KNOWLEDGE IS OF MOST WORTH?

IT has been truly remarked that, in order of time, decoration precedes dress. Among people who submit to great physical suffering that they may have themselves handsomely tattooed, extremes of temperature are borne with but little attempt at mitigation. Humboldt tells us that an Orinoco Indian, though quite regardless of bodily comfort, will yet labour for a fortnight to purchase pigment wherewith to make himself admired; and that the same woman who would not hesitate to leave her hut without a fragment of clothing on, would not dare to commit such a breach of decorum as to go out unpainted. Voyagers find that coloured beads and trinkets are much more prized by wild tribes, than are calicoes or broadcloths. And the anecdotes we have of the ways in which, when shirts and coats are given, savages turn them to some ludicrous display, show how completely the idea of ornament predominates over that of use. Nay, there are still more extreme illustrations: witness the fact narrated by Capt. Speke of his African attendants, who strutted about in their goat-skin mantles when the weather was fine, but when it was wet, took them off, folded them up, and went about naked, shivering in the rain! Indeed, the facts of aboriginal life seem

to indicate that dress is developed out of decorations. And when we remember that even among ourselves most think more about the fineness of the fabric than its warmth, and more about the cut than the convenience—when we see that the function is still in great measure subordinated to the appearance—we have further reason for inferring such an origin.

It is curious that the like relations hold with the mind. Among mental as among bodily acquisitions, the ornamental comes before the useful. Not only in times past, but almost as much in our own era, that knowledge which conduces to personal well-being has been postponed to that which brings applause. In the Greek schools, music, poetry, rhetoric, and a philosophy which, until Socrates taught, had but little bearing upon action, were the dominant subjects; while knowledge aiding the arts of life had a very subordinate place. And in our own universities and schools at the present moment, the like antithesis holds. We are guilty of something like a platitude when we say that throughout his after-career, a boy, in nine cases out of ten, applies his Latin and Greek to no practical purposes. The remark is trite that in his shop, or his office, in managing his estate or his family, in playing his part as director of a bank or a railway, he is very little aided by this knowledge he took so many years to acquire—so

little, that generally the greater part of it drops out of his memory; and if he occasionally vents a Latin quotation, or alludes to some Greek myth, it is less to throw light on the topic in hand than for the sake of effect. If we inquire what is the real motive for giving boys a classical education, we find it to be simply conformity to public opinion. Men dress their children's minds as they do their bodies, in the prevailing fashion. As the Orinoco Indian puts on paint before leaving his hut, not with a view to any direct benefit, but because he would be ashamed to be seen without it; so, a boy's drilling in Latin and Greek is insisted on, not because of their intrinsic value, but that he may not be disgraced by being found ignorant of them—that he may have “the education of a gentleman”—the badge marking a certain social position, and bringing a consequent respect.

This parallel is still more clearly displayed in the case of the other sex. In the treatment of both mind and body, the decorative element has continued to predominate in a greater degree among women than among men. Originally, personal adornment occupied the attention of both sexes equally. In these latter days of civilisation, however, we see that in the dress of men the regard for appearance has in a considerable degree yielded to the regard for comfort; while in their education the useful has of late been trenching on the ornamental. In neither direction has this change gone so far with women. The wearing of ear-rings, finger-rings, bracelets; the elaborate dressings of the hair; the still occasional use of paint; the immense labour bestowed in making habiliments sufficiently attractive; and the great discomfort that will be submitted to for the sake of conformity;

show how greatly, in the attiring of women, the desire of approbation overrides the desire for warmth and convenience. And similarly in their education, the immense preponderance of “accomplishments” proves how here, too, use is subordinated to display. Dancing, deportment, the piano, singing, drawing—what a large space do these occupy! If you ask why Italian and German are learnt, you will find that, under all the sham reasons given, the real reason is, that a knowledge of those tongues is thought ladylike. It is not that the books written in them may be utilised, which they scarcely ever are; but that Italian and German songs may be sung, and that the extent of attainment may bring whispered admiration. The births, deaths, and marriages of kings, and other like historic trivialities, are committed to memory, not because of any direct benefits that can possibly result from knowing them; but because society considers them parts of a good education—because the absence of such knowledge may bring the contempt of others. When we have named reading, writing, spelling, grammar, arithmetic, and sewing, we have named about all the things a girl is taught with a view to their actual uses in life; and even some of these have more reference to the good opinion of others than to immediate personal welfare.

Thoroughly to realise the truth that with the mind as with the body the ornamental precedes the useful, it is requisite to glance at its rationale. This lies in the fact that, from the far past down even to the present, social needs have subordinated individual needs, and that the chief social need has been the control of individuals. It is not, as we commonly suppose, that there are no governments but those of monarchs, and

parliaments, and constituted authorities. These acknowledged governments are supplemented by other unacknowledged ones, that grow up in all circles, in which every man or woman strives to be king or queen or lesser dignitary. To get above some and be revered by them, and to propitiate those who are above us, is the universal struggle in which the chief energies of life are expended. By the accumulation of wealth, by style of living, by beauty of dress, by display of knowledge of intellect, each tries to subjugate others; and so aids in weaving that ramified network of restraints by which society is kept in order. It is not the savage chief only, who, in formidable war-paint, with scalps at his belt, aims to strike awe into his inferiors; it is not only the belle who, by elaborate toilet, polished manners, and numerous accomplishments, strives to "make conquests"; but the scholar, the historian, the philosopher, use their acquisitions to the same end. We are none of us content with quietly unfolding our own individualities to the full in all directions; but have a restless craving to impress our individualities upon others, and in some way subordinate them. And this it is which determines the character of our education. Not what knowledge is of most real worth, is the consideration; but what will bring most applause, honour, respect—what will most conduce to social position and influence—what will be most imposing. As, throughout life, not what we are, but what we shall be thought, is the question; so in education, the question is, not the intrinsic value of knowledge, so much as its extrinsic effects on others. And this being our dominant idea, direct utility is scarcely more regarded than by the barbarian when filing his teeth and staining his nails.

If there requires further evidence of the rude, undeveloped character of our education, we have it in the fact that the comparative worths of different kinds of knowledge have been as yet scarcely even discussed—much less discussed in a methodic way with definite results. Not only is it that no standard of relative values has yet been agreed upon; but the existence of any such standard has not been conceived in a clear manner. And not only is it that the existence of such a standard has not been clearly conceived: but the need for it seems to have been scarcely even felt. Men read books on this topic, and attend lectures on that; decide that their children shall be instructed in these branches of knowledge, and shall not be instructed in those; and all under the guidance of mere custom, or liking, or prejudice; without ever considering the enormous importance of determining in some rational way what things are really most worth learning. It is true that in all circles we hear occasional remarks on the importance of this or the other order of information. But whether the degree of its importance justifies the expenditure of the time needed to acquire it; and whether there are not things of more importance to which such time might be better devoted; are queries which, if raised at all, are disposed of quite summarily, according to personal predilections. It is true also, that now and then, we hear revived the standing controversy respecting the comparative merits of classics and mathematics. This controversy, however, is carried on in an empirical manner, with no reference to an ascertained criterion; and the question at issue is insignificant when compared with the general question of which it is part. To suppose that

deciding whether a mathematical or a classical education is the best, is deciding what is the proper *curriculum*, is much the same thing as to suppose that the whole of dietetics lies in ascertaining whether or not bread is more nutritive than potatoes!

The question which we contend is of such transcendent moment, is, not whether such or such knowledge is of worth, but what is its *relative* worth? When they have named certain advantages which a given course of study has secured them, persons are apt to assume that they have justified themselves: quite forgetting that the adequateness of the advantages is the point to be judged. There is, perhaps, not a subject to which men devote attention that has *not some value*. A year diligently spent in getting up heraldry, would very possibly give a little further insight into ancient manners and morals. Any one who should learn the distances between all the towns in England, might, in the course of his life, find one or two of the thousand facts he had acquired of some slight service when arranging a journey. Gathering together all the small gossip of a county, profitless occupation as it would be, might yet occasionally help to establish some useful fact—say, a good example of hereditary transmission. But in these cases, every one would admit that there was no proportion between the required labour and the probable benefit. No one would tolerate the proposal to devote some years of a boy's time to getting such information, at the cost of much more valuable information which he might else have got. And if here the test of relative value is appealed to and held conclusive, then should it be appealed to and held conclusive throughout. Had we time to master all subjects we need not be particular. To quote the old song:—

Could a man be secure
That his days would endure
As of old, for a thousand long years,
What things might he know!
What deeds might he do!
And all without hurry or care.

"But we that have but span-long lives" must ever bear in mind our limited time for acquisition. And remembering how narrowly this time is limited, not only by the shortness of life, but also still more by the business of life, we ought to be especially solicitous to employ what time we have to the greatest advantage. Before devoting years to some subject which fashion or fancy suggests, it is surely wise to weigh with great care the worth of the results, as compared with the worth of various alternative results which the same years might bring if otherwise applied.

In education, then, this is the question of questions, which it is high time we discussed in some methodic way. The first in importance, though the last to be considered, is the problem—how to decide among the conflicting claims of various subjects on our attention. Before there can be a rational *curriculum*, we must settle which things it most concerns us to know; or, to use a word of Bacon's, now unfortunately obsolete—we must determine the relative values of knowledges.

To this end, a measure of value is the first requisite. And happily, respecting the true measure of value, as expressed in general terms, there can be no dispute. Everyone, in contending for the worth of any particular order of information, does so by showing its bearing upon some part of life. In reply to the question—"Of what use is it?" the mathematician, linguist, naturalist, or philosopher, explains the way in which his learning beneficially influences action—says from

evil or secures good—conduces to happiness. When the teacher of writing has pointed out how great an aid writing is to success in business—that is, to the obtainment of sustenance—that is, to satisfactory living; he is held to have proved his case. And when the collector of dead facts (say a numismatist) fails to make clear any appreciable effects which these facts can produce on human welfare, he is obliged to admit that they are comparatively valueless. All then, either directly or by implication, appeal to this as the ultimate test.

How to live?—that is the essential question for us. Not how to live in the mere material sense only, but in the widest sense. The general problem which comprehends every special problem is—the right ruling of conduct in all directions under all circumstances. In what way to treat the body; in what way to treat the mind; in what way to manage our affairs; in what way to bring up a family; in what way to behave as a citizen; in what way to utilise those sources of happiness which nature supplies—how to use all our faculties to the greatest advantage of ourselves and others—how to live completely? And this being the great thing needful for us to learn, is, by consequence, the great thing which education has to teach. To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of an educational course is, to judge in what degree it discharges such function.

This test, never used in its entirety, but rarely even partially used, and used then in a vague, half conscious way, has to be applied consciously, methodically, and throughout all cases. It behoves us to set before ourselves, and ever to keep clearly in view, complete living as the

end to be achieved; so that in bringing up our children we may choose subjects and methods of instruction, with deliberate reference to this end. Not only ought we to cease from the mere unthinking adoption of the current fashion in education, which has no better warrant than any other fashion; but we must also rise above that rude, empirical style of judging displayed by those more intelligent people who do bestow some care in overseeing the cultivation of their children's minds. It must not suffice simply to *think* that such or such information will be useful in after life, or that this kind of knowledge is of more practical value than that; but we must seek out some process of estimating their respective values, so that as far as possible we may positively *know* which are most deserving of attention.

Doubtless the task is difficult—perhaps never to be more than approximately achieved. But, considering the vastness of the interests at stake, its difficulty is no reason for pusillanimously passing it by; but rather for devoting every energy to its mastery. And if we only proceed systematically, we may very soon get at results of no small moment.

Our first step must obviously be to classify, in the order of their importance, the leading kinds of activity which constitute human life. They may be naturally arranged into:—1. those activities which directly minister to self-preservation; 2. those activities which, by securing the necessities of life, indirectly minister to self-preservation; 3. those activities which have for their end the rearing and discipline of offspring; 4. those activities which are involved in the maintenance of proper social and political relations; 5. those miscellaneous activities which fill up the leisure part of life, devoted to the gratification of the tastes and feelings.

That these stand in something like their true order of subordination, it needs no long consideration to show. The actions and precautions by which, from moment to moment, we secure personal safety, must clearly take precedence of all others. Could there be a man, ignorant as an infant of surrounding objects and movements, or how to guide himself among them, he would pretty certainly lose his life the first time he went into the street; notwithstanding any amount of learning he might have on other matters. And as entire ignorance in all other directions would be less promptly fatal than entire ignorance in this direction, it must be admitted that knowledge immediately conducive to self-preservation is of primary importance.

That next after direct self-preservation comes the indirect self-preservation which consists in acquiring the means of living, none will question. That a man's industrial functions must be considered before his parental ones, is manifest from the fact that, speaking generally, the discharge of the parental functions is made possible only by the previous discharge of the industrial ones. The power of self-maintenance necessarily preceding the power of maintaining offspring, it follows that knowledge needful for self-maintenance has stronger claims than knowledge needful for family welfare—is second in value to none save knowledge needful for immediate self-preservation.

As the family comes before the State in order of time—as the bringing up of children is possible before the State exists, or when it has ceased to be, whereas the State is rendered possible only by the bringing up of children; it follows that the duties of the parent demand closer attention than those of the citizen. Or, to use a further argu-

ment—since the goodness of a society ultimately depends on the nature of its citizens; and since the nature of its citizens is more modifiable by early training than by anything else; we must conclude that the welfare of the family underlies the welfare of society. And hence knowledge directly conducing to the first, must take precedence of knowledge directly conducing to the last.

Those various forms of pleasurable occupation which fill up the leisure left by graver occupations—the enjoyments of music, poetry, painting, etc.—manifestly imply a pre-existing society. Not only is a considerable development of them impossible without a long-established social union; but their very subject-matter consists in great part of social sentiments and sympathies. Not only does society supply the conditions to their growth; but also the ideas and sentiments they express. And, consequently, that part of human conduct which constitutes good citizenship, is of more moment than that which goes out in accomplishments or exercise of the tastes; and, in education, preparation for the one must rank before preparation for the other.

Such then, we repeat, is something like the rational order of subordination:—That education which prepares for direct self-preservation; that which prepares for indirect self-preservation; that which prepares for parenthood; that which prepares for citizenship; that which prepares for the miscellaneous refinements of life. We do not mean to say that these divisions are definitely separable. We do not deny that they are intricately entangled with each other, in such way that there can be no training for any that is not in some measure a training for all. Nor do we question that of each division there are portions more important than

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certain portions of the preceding divisions: that, for instance, a man of much skill in business but little other faculty, may fall further below the standard of complete living than one of but moderate ability in money-getting but great judgment as a parent; or that exhaustive information bearing on right social action, joined with entire want of general culture in literature and the fine arts, is less desirable than a more moderate share of the one joined with some of the other. But, after making due qualifications, there still remain these broadly-marked divisions; and it still continues substantially true that these divisions subordinate one another in the foregoing order, because the corresponding divisions of life make one another *possible* in that order.

Of course the ideal of education is—complete preparation in all these divisions. But failing this ideal, as in our phase of civilisation every one must do more or less, the aim should be to maintain a *due proportion* between the degrees of preparation in each. Not exhaustive cultivation in any one, supremely important though it may be—not even an exclusive attention to the two, three, or four divisions of greatest importance; but an attention to all;—greatest where the value is greatest; less where the value is less; least where the value is least. For the average man (not to forget the cases in which peculiar aptitude for some one department of knowledge, rightly makes pursuit of that one the bread-winning occupation)—for the average man, we say, the desideratum is, a training that approaches nearest to perfection in the things which most subserve complete living, and falls more and more below perfection in the things that have more and more remote bearings on complete living.

In regulating education by this standard, there are some general considerations that should be ever present to us. The worth of any kind of culture, as aiding complete living, may be either necessary or more or less contingent. There is knowledge of intrinsic value; knowledge of quasi-intrinsic value; and knowledge of conventional value. Such facts as that sensations of numbness and tingling commonly precede paralysis, that the resistance of water to a body moving through it varies as the square of the velocity, that chlorine is a disinfectant—these, and the truths of Science in general, are of intrinsic value; they will bear on human conduct ten thousand years hence as they do now. The extra knowledge of our own language, which is given by an acquaintance with Latin and Greek, may be considered to have a value that is quasi-intrinsic: it must exist for us and for other races whose languages owe much to these sources; but will last only as long as our languages last. While that kind of information which, in our schools, usurps the name History—the mere tissue of names and dates and dead unmeaning events—has a conventional value only: it has not the remotest bearing on any of our actions; and is of use only for the avoidance of those unpleasant criticisms which current opinion passes upon its absence. Of course, as those facts which concern all mankind throughout all time must be held of greater moment than those which concern only a portion of them during a limited era, and of far greater moment than those which concern only a portion of them during the continuance of a fashion; it follows that in a rational estimate, knowledge of intrinsic worth must, other things equal, take precedence of knowledge, that is of quasi-intrinsic or conventional worth.

One further preliminary. Acquirement of every kind has two values—value as *knowledge* and value as *discipline*. Besides its use for guiding conduct, the acquisition of each order of facts has also its use as mental exercise; and its effects as a preparative for complete living have to be considered under both these heads.

These, then, are the general ideas with which we must set out in discussing a *curriculum*.—Life as divided into several kinds of activity of successively decreasing importance; the worth of each order of facts as regulating these several kinds of activity, intrinsically, quasi-intrinsically, and conventionally; and their regulative influences estimated both as knowledge and discipline.

Happily, that all-important part of education which goes to secure direct self-preservation, is in great part already provided for. Too momentous to be left to our blundering, Nature takes it into her own hands. While yet in its nurse's arms, the infant, by hiding its face and crying at the sight of a stranger, shows the dawning instinct to attain safety by flying from that which is unknown and may be dangerous; and when it can walk, the terror it manifests if an unfamiliar dog comes near, or the screams with which it runs to its mother, after any startling sight or sound, shows this instinct further developed. Moreover, knowledge subserving direct self-preservation is that which it is chiefly busied in acquiring from hour to hour. How to balance its body; how to control its movements so as to avoid collisions: what objects are hard, and will hurt if struck; what objects are heavy, and injure if they fall on the limbs; which things will bear the weight of the body, and which not; the pains inflicted by fire, by missiles, by sharp instruments—

these, and various other pieces of information needful for the avoidance of death or accident, it is ever learning. And when, a few years later, the energies go out in running, climbing, and jumping, in games of strength and games of skill, we see in all these actions by which the muscles are developed, the perceptions sharpened, and the judgment quickened, a preparation for the safe conduct of the body among surrounding objects and movements; and for meeting those greater dangers that occasionally occur in the lives of all. Being thus, as we say, so well cared for by Nature, this fundamental education needs comparatively little care from us. What we are chiefly called upon to see, is, that there shall be free scope for gaining this experience and receiving this discipline—that there shall be no such thwarting of Nature as that by which stupid school-mistresses commonly prevent the girls in their charge from the spontaneous physical activities they would indulge in; and so render them comparatively incapable of taking care of themselves in circumstances of peril.

This, however, is by no means all that is comprehended in the education that prepares for direct self-preservation. Besides guarding the body against mechanical damage or destruction, it has to be guarded against injury from other causes—against the disease and death that follow breaches of physiologic law. For complete living it is necessary, not only that sudden annihilations of life shall be warded off; but also that there shall be escaped the incapacities and the slow annihilation which unwise habits entail. As, without health and energy, the industrial, the parental, the social, and all other activities become more or less impossible; it is clear that this secondary kind of direct self-

preservation is only less important than the primary kind; and that knowledge tending to secure it should rank very high.

It is true that here, too, guidance is in some measure ready supplied. By our various physical sensations and desires, Nature has insured a tolerable conformity to the chief requirements. Fortunately for us, want of food, great heat, extreme cold, produce promptings too peremptory to be disregarded. And would men habitually obey these and all like promptings when less strong, comparatively few evils would arise. If fatigue of body or brain were in every case followed by desistance; if the oppression produced by a close atmosphere always led to ventilation; if there were no eating without hunger, or drinking without thirst; then would the system be but seldom out of working order. But so profound an ignorance is there of the laws of life, that men do not even know that their sensations are their natural guides, and (when not rendered morbid by long-continued disobedience) their trustworthy guides. So that though, to speak teleologically, Nature has provided efficient safeguards to health, lack of knowledge makes them in a great measure useless.

If any one doubts the importance of an acquaintance with the principles of physiology, as a means to complete living, let him look around and see how many men and women he can find in middle or later life who are thoroughly well. Only occasionally do we meet with an example of vigorous health continued to old age; hourly we meet with examples of acute disorder, chronic ailment, general debility, premature decrepitude. Scarcely is there one to whom you put the question, who has not, in the course of his life, brought

upon himself illnesses which a little information would have saved him from. Here is a case of heart-disease consequent on a rheumatic fever that followed reckless exposure. There is a case of eyes spoiled for life by over-study. Yesterday the account was of one whose long-enduring lameness was brought on by continuing, spite of the pain, to use a knee after it had been slightly injured. And to-day we are told of another who has had to lie by for years, because he did not know that the palpitation he suffered under resulted from overtaxed brain. Now we hear of an irremediable injury which followed some silly feat of strength; and, again, of a constitution that has never recovered from the effects of excessive work needlessly undertaken. While on every side we see the perpetual minor ailments which accompany feebleness. Not to dwell on the pain, the weariness, the gloom, the waste of time and money thus entailed, only consider how greatly ill-health hinders the discharge of all duties—makes business often impossible, and always more difficult; produces an irritability fatal to the right management of children; puts the functions of citizenship out of the question; and makes amusement a bore. Is it not clear that the physical sins—partly our forefathers' and partly our own—which produce this ill-health, deduct more from complete living than anything else? and to a great extent make life a failure and a burden instead of a benefaction and a pleasure?

Nor is this all. Life, besides being thus immensely deteriorated, is also cut short. It is not true, as we commonly suppose, that after a disorder or disease from which we have recovered, we are as before. No disturbance of the normal course of the functions can pass away and leave things exactly as they were.

A permanent damage is done—not immediately appreciable, it may be, but still there; and along with other such items which Nature in her strict accounting never drops, it will tell against us to the inevitable shortening of our days. Through the accumulation of small injuries it is that constitutions are commonly undermined, and break down, long before their time. And if we call to mind how far the average duration of life falls below the possible duration, we see how immense is the loss. When, to the numerous partial deductions which bad health entails, we add this great final deduction, it results that ordinarily one-half of life is thrown away.

Hence, knowledge which subserves direct self-preservation by preventing this loss of health, is of primary importance. We do not contend that possession of such knowledge would by any means wholly remedy the evil. It is clear that in our present phase of civilisation, men's necessities often compel them to transgress. And it is further clear that, even in the absence of such compulsion, their inclinations would frequently lead them, spite of their convictions, to sacrifice future good to present gratification. But we *do* contend that the right knowledge impressed in the right way would effect much; and we further contend that as the laws of health must be recognised before they can be fully conformed to, the imparting of such knowledge must precede a more rational living—come when that may. We infer that as vigorous health and its accompanying high spirits are larger elements of happiness than any other things whatever, the teaching how to maintain them is a teaching that yields in moment to no other whatever. And therefore we assert that such a course of physiology as is needful for the comprehension of its general truths, and their

bearings on daily conduct, is an all-essential part of a rational education.

Strange that the assertion should need making! Stranger still that it should need defending! Yet are there not a few by whom such a proposition will be received with something approaching to derision. Men who would blush if caught saying Iphigénia instead of Iphigenia, or would resent as an insult any imputation of ignorance respecting the fabled labours of a fabled demi-god, show not the slightest shame in confessing that they do not know where the Eustachian tubes are, what are the actions of the spinal cord, what is the normal rate of pulsation, or how the lungs are inflated. While anxious that their sons should be well up in the superstitions of two thousand years ago, they care not that they should be taught anything about the structure and functions of their own bodies—nay, even wish them not to be so taught. So overwhelming is the influence of established routine! So terribly in our education does the ornamental over-ride the useful!

We need not insist on the value of that knowledge which aids indirect self-preservation by facilitating the gaining of a livelihood. This is admitted by all; and, indeed, by the mass is perhaps too exclusively regarded as the end of education. But while every one is ready to endorse the abstract proposition that instruction fitting youths for the business of life is of high importance, or even to consider it of supreme importance; yet scarcely any inquire what instruction will so fit them. It is true that reading, writing, and arithmetic are taught with an intelligent appreciation of their uses. But when we have said this we have said nearly all. While the great bulk of what else is acquired has no bearing on the industrial activities, an immensity of

information that has a direct bearing on the industrial activities is entirely passed over.

For, leaving out only some very small classes, what are all men employed in? They are employed in the production, preparation, and distribution of commodities. And on what does efficiency in the production, preparation, and distribution of commodities depend? It depends on the use of methods fitted to the respective natures of these commodities; it depends on an adequate acquaintance with their physical, chemical, and vital properties, as the case may be; that is, it depends on Science. This order of knowledge which is in great part ignored in our school-courses, is the order of knowledge underlying the right performance of those processes by which civilised life is made possible. Undeniable as is this truth, there seems to be no living consciousness of it: its very familiarity makes it unregarded. To give due weight to our argument, we must, therefore, realise this truth to the reader by a rapid review of the facts.

Passing over the most abstract science, Logic, on the due guidance by which, however, the large producer or distributor depends, knowingly or unknowingly, for success in his business-forecasts, we come first to Mathematics. Of this, the most general division, dealing with number, guides all industrial activities: be they those by which processes are adjusted, or estimates framed, or commodities bought and sold, or accounts kept. No one needs to have the value of this division of abstract science insisted upon.

For the higher arts of construction, some acquaintance with the more special division of Mathematics is indispensable. The village carpenter, who lays out his work by empirical rules, equally with the builder of a Britannia Bridge, makes

hourly reference to the laws of space-relations. The surveyor who measures the land purchased; the architect in designing a mansion to be built on it; the builder when laying out the foundations; the masons in cutting the stones; and the various artisans who put up the fittings; are all guided by geometrical truths. Railway-making is regulated from beginning to end by geometry; alike in the preparation of plans and sections; in staking out the line; in the mensuration of cuttings and embankments; in the designing and building of bridges, culverts, viaducts, tunnels, stations. Similarly with the harbours, docks, piers, and various engineering and architectural works that fringe the coasts and overspread the country, as well as the mines that run underneath it. And now-a-days, even the farmer, for the correct laying-out of his drains, has recourse to the level—that is, to geometrical principles.

Turn next to the Abstract-Concrete sciences. On the application of the simplest of these, Mechanics, depends the success of modern manufactures. The properties of the lever, the wheel-and-axle, etc., are recognised in every machine, and to machinery in these times we owe all production. Trace the history of the breakfast-roll. The soil out of which it came was drained with machine-made tiles; the surface was turned over by a machine; the wheat was reaped, thrashed, and winnowed by machines; by machinery it was ground and bolted; and had the flour been sent to Gosport, it might have been made into biscuits by a machine. Look round the room in which you sit. If modern, probably the bricks in its walls were machine-made; and by machinery the flooring was sawn and planed, the mantel-shelf sawn and polished, the

paper-hangings made and printed. The veneer on the table, the turned legs of the chairs, the carpet, the curtains, are all products of machinery. Your clothing—plain, figured, or printed—is it not wholly woven, nay, perhaps even sewed, by machinery? And the volume you are reading—are not its leaves fabricated by one machine and covered with these words by another? Add to which that for the means of distribution over both land and sea, we are similarly indebted. And then observe that according as knowledge of mechanics is well or ill applied to these ends, comes success or failure. The engineer who miscalculates the strength of materials, builds a bridge that breaks down. The manufacturer who uses a bad machine cannot compete with another whose machine wastes less in friction and inertia. The ship-builder adhering to the old model, is outsailed by one who builds on the mechanically-justified wave-line principle. And as the ability of a nation to hold its own against other nations, depends on the skilled activity of its units, we see that on mechanical knowledge may turn the national fate.

On ascending from the divisions of Abstract-Concrete science dealing with molar forces, to those divisions of it which deal with molecular forces, we come to another vast series of applications. To this group of sciences joined with the preceding groups we owe the steam-engine, which does the work of millions of labourers. That section of physics which formulates the laws of heat, has taught us how to economise fuel in various industries: how to increase the produce of smelting furnaces by substituting the hot for the cold blast; how to ventilate mines; how to prevent explosions by using the safety-lamp; and, through the thermometer, how to regulate

innumerable processes. That section which has the phenomena of light for its subject, gives eyes to the old and the myopic; aids through the microscope in detecting diseases and adulterations; and, by improved lighthouses, prevents shipwrecks. Researches in electricity and magnetism have saved innumerable lives and incalculable property through the compass; have subserved many arts by the electrotpe; and now, in the telegraph, have supplied us with an agency by which, for the future, mercantile transactions will be regulated and political intercourse carried on. While in the details of indoor life, from the improved kitchen-range up to the stereoscope on the drawing-room table, the applications of advanced physics underlie our comforts and gratifications.

Still more numerous are the applications of Chemistry. The bleacher, the dyer, the calico-printer, are severally occupied in processes that are well or ill done according as they do or do not conform to chemical laws. Smelting of copper, tin, zinc, lead, silver, iron, must be guided by chemistry. Sugar-refining, gas-making, soap-boiling, gunpowder-manufacture, are operations all partly chemical, as are likewise those which produce glass and porcelain. Whether the distiller's wort stops at the alcoholic fermentation or passes into the acetous, is a chemical question on which hangs his profit or loss; and the brewer, if his business is extensive, finds it pay to keep a chemist on his premises. Indeed, there is now scarcely any manufacture over some part of which chemistry does not preside. Nay, in these times even agriculture, to be profitably carried on, must have like guidance. The analysis of manures and soils; the disclosure of their respective adaptations; the use of gypsum or other substances for fixing

ammonia; the utilisation of coprolites; the production of artificial manures—all these are boons of chemistry which it behoves the farmer to acquaint himself with. Be it in the lucifer match, or in disinfected sewage, or in photographs—in bread made without fermentation, or perfumes extracted from refuse, we may perceive that chemistry affects all our industries; and that, therefore, knowledge of it concerns every one who is directly or indirectly connected with our industries.

Of the Concrete sciences, we come first to Astronomy. Out of this has grown that art of navigation which has made possible the enormous foreign commerce that supports a large part of our population, while supplying us with many necessities and most of our luxuries.

Geology, again, is a science knowledge of which greatly aids industrial success. Now that iron ores are so large a source of wealth; now that the duration of our coal-supply has become a question of great interest; now that we have a College of Mines and a Geological Survey, it is scarcely needful to enlarge on the truth that the study of the Earth's crust is important to our material welfare.

And then the science of life—Biology: does not this, too, bear fundamentally on these processes of indirect self-preservation? With what we ordinarily call manufactures, it has, indeed, little connection; but with the all-essential manufacture—that of food—it is inseparably connected. As agriculture must conform its methods to the phenomena of vegetal and animal life, it follows that the science of these phenomena is the rational basis of agriculture. Various biological truths have indeed been empirically established and acted upon by farmers, while yet there has been no conception of them as science; such as that particular manures are suited to particular plants; that crops

of certain kinds unfit the soil for other crops; that horses cannot do good work on poor food; that such and such diseases of cattle and sheep are caused by such and such conditions. These, and the every-day knowledge which the agriculturist gains by experience respecting the management of plants and animals, constitute his stock of biological facts; on the largeness of which greatly depends his success. And as these biological facts, scanty, indefinite, rudimentary, though they are, aid him so essentially; judge what must be the value to him of such facts when they become positive, definite, and exhaustive. Indeed, even now we may see the benefits that rational biology is conferring on him. The truth that the production of animal heat implies waste of substance, and that, therefore, preventing loss of heat prevents the need for extra food—a purely theoretical conclusion—now guides the fattening of cattle: it is found that by keeping cattle warm, fodder is saved. Similarly with respect to variety of food. The experiments of physiologists have shown that not only is change of diet beneficial, but that digestion is facilitated by a mixture of ingredients in each meal. The discovery that a disorder known as “the staggers,” of which many thousands of sheep have died annually, is caused by an entozoon which presses on the brain, and that if the creature is extracted through the softened place in the skull which marks its position, the sheep usually recovers, is another debt which agriculture owes to biology.

Yet one more science have we to note as bearing directly on industrial success—the Science of Society. Men who daily look at the state of the money-market; glance over prices current; discuss the probable crops of corn, cotton, sugar, wool, silk; weigh the chances of

war; and from these data decide on their mercantile operations; are students of social science; empirical and blundering students it may be; but still, students who gain the prizes or are plucked of their profits, according as they do or do not reach the right conclusion. Not only the manufacturer and the merchant must guide their transactions by calculations of supply and demand, based on numerous facts, and tacitly recognising sundry general principles of social action; but even the retailer must do the like; his prosperity very greatly depending upon the correctness of his judgments respecting the future wholesale prices and the future rates of consumption. Manifestly, whoever takes part in the entangled commercial activities of a community, is vitally interested in understanding the laws according to which those activities vary.

Thus, to all such as are occupied in the production, exchange, or distribution of commodities, acquaintance with Science in some of its departments, is of fundamental importance. Each man who is immediately or remotely implicated in any form of industry, (and few are not,) has in some way to deal with the mathematical, physical, and chemical properties of things; perhaps, also, has a direct interest in biology; and certainly has in sociology. Whether he does or does not succeed well in that indirect self-preservation which we call getting a good livelihood, depends in a great degree on his knowledge of one or more of these sciences: not, it may be, a rational knowledge; but still a knowledge, though empirical. For what we call learning a business, really implies learning the science involved in it; though not perhaps under the name of science. And hence a grounding in science is of great importance, both

because it prepares for all this, and because rational knowledge has an immense superiority over empirical knowledge. Moreover, not only is scientific culture requisite for each, that he may understand the *how* and the *why* of the things and processes with which he is concerned as maker or distributor; but it is often of much moment that he should understand the *how* and the *why* of various other things and processes. In this age of joint-stock undertakings, nearly every man above the labourer is interested as capitalist in some other occupation than his own; and, as thus interested, his profit or loss depends on his knowledge of the sciences bearing on this other occupation. Here is a mine, in the sinking of which many shareholders ruined themselves, from not knowing that a certain fossil belonged to the old red sand stone, below which no coal is found. Numerous attempts have been made to construct perpetual-motion engines in the hope of superseding steam; but had those who supplied the money, understood the general law of the conservation and equivalence of forces, they might have had better balances at their bankers. Daily are men induced to aid in carrying out inventions which a mere tyro in science could show to be futile. Scarcely a locality but has its history of fortunes thrown away over some impossible project.

And if already the loss from want of science is so frequent and so great, still greater and more frequent will it be to those who hereafter lack science. Just as fast as productive processes become more scientific, which competition will inevitably make them do; and just as fast as joint-stock undertakings spread, which they certainly will; so fast must scientific knowledge grow necessary to every one. That which our school-courses

leave almost entirely out, we thus find to be that which most nearly concerns the business of life. Our industries would cease, were it not for the information which men begin to acquire, as they best may, after their education is said to be finished. And were it not for the information, from age to age accumulated and spread by unofficial means, these industries would never have existed. Had there been no teaching but such as goes on in our public schools, England would now be what it was in feudal times. That increasing acquaintance with the laws of phenomena, which has through successive ages enabled us to subjugate Nature to our needs, and in these days gives the common labourer comforts which a few centuries ago kings could not purchase, is scarcely in any degree owed to the appointed means of instructing our youth. The vital knowledge—that by which we have grown as a nation to what we are, and which now underlies our whole existence, is a knowledge that has got itself taught in nooks and corners; while the ordained agencies for teaching have been mumbling little else but dead formulas.

We come now to the third great division of human activities—a division for which no preparation whatever is made. If by some strange chance not a vestige of us descended to the remote future save a pile of our school-books or some college examination-papers, we may imagine how puzzled an antiquary of the period would be on finding in them no sign that the learners were ever likely to be parents. "This must have been the *curriculum* for their celibates," we may fancy him concluding. "I perceive here an elaborate preparation for many things; especially for reading the books of extinct nations and of co-existing

nations (from which indeed it seems clear that these people had very little worth reading in their own tongue); but I find no reference whatever to the bringing up of children. They could not have been so absurd as to omit all training for this gravest of responsibilities. Evidently then, this was the school-course of one of their monastic orders."

Seriously, is it not an astonishing fact, that though on the treatment of offspring depend their lives or deaths, and their moral welfare or ruin; yet not one word of instruction on the treatment of offspring is ever given to those who will by and by be parents? Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy—joined with the suggestions of ignorant nurses and the prejudiced counsel of grandmothers? If a merchant commenced business without any knowledge of arithmetic and book-keeping, we should exclaim at his folly, and look for disastrous consequences. Or if, before studying anatomy, a man set up as a surgical operator, we should wonder at his audacity and pity his patients. But that parents should begin the difficult task of rearing children without ever having given a thought to the principles—physical, moral, or intellectual—which ought to guide them, excites neither surprise at the actors nor pity for their victims.

To tens of thousands that are killed, add hundreds of thousands that survive with feeble constitutions, and millions that grow up with constitutions not so strong as they should be; and you will have some idea of the curse inflicted on their offspring by parents ignorant of the laws of life. Do but consider for a moment that the regimen to which children are subject, is hourly telling upon them to their life-long injury or

benefit ; and that there are twenty ways of going wrong to one way of going right ; and you will get some idea of the enormous mischief that is almost everywhere inflicted by the thoughtless, haphazard system in common use. Is it decided that a boy shall be clothed in some flimsy short dress, and be allowed to go playing about with limbs reddened by cold ? The decision will tell on his whole future existence—either in illnesses ; or in stunted growth ; or in deficient energy ; or in a maturity less vigorous than it ought to have been, and in consequent hindrances to success and happiness. Are children doomed to a monotonous dietary, or a dietary that is deficient in nutritiveness ? Their ultimate physical power and their efficiency as men and women, will inevitably be more or less diminished by it. Are they forbidden vociferous play, or (being too ill-clothed to bear exposure) are they kept in-doors in cold weather ? They are certain to fall below that measure of health and strength to which they would else have attained. When sons and daughters grow up sickly and feeble, parents commonly regard the event as a misfortune—as a visitation of Providence. Thinking after the prevalent chaotic fashion, they assume that these evils come without causes ; or that the causes are supernatural. Nothing of the kind. In some cases the causes are doubtless inherited ; but in most cases foolish regulations are the causes. Very generally, parents themselves are responsible for all this pain, this debility, this depression, this misery. They have undertaken to control the lives of their offspring from hour to hour ; with cruel carelessness they have neglected to learn anything about these vital processes which they are unceasingly affecting by their commands and prohibitions ; in

utter ignorance of the simplest physiologic laws, they have been year by year undermining the constitutions of their children ; and have so inflicted disease and premature death, not only on them but on their descendants.

Equally great are the ignorance and the consequent injury, when we turn from physical training to moral training. Consider the young mother and her nursery-legislation. But a few years ago she was at school, where her memory was crammed with words, and names, and dates, and her reflective faculties scarcely in the slightest degree exercised—where not one idea was given her respecting the methods of dealing with the opening mind of childhood ; and where her discipline did not in the least fit her for thinking out methods of her own. The intervening years have been passed in practising music, in fancy-work, in novel-reading, and in party-going : no thought having yet been given to the grave responsibilities of maternity ; and scarcely any of that solid intellectual culture obtained which would be some preparation for such responsibilities. And now see her with an unfolding human character committed to her charge—see her profoundly ignorant of the phenomena with which she has to deal, undertaking to do that which can be done but imperfectly even with the aid of the profoundest knowledge. She knows nothing about the nature of the emotions, their order of evolution, their functions, or where use ends and abuse begins. She is under the impression that some of the feelings are wholly bad, which is not true of any one of them ; and that others are good however far they may be carried, which is also not true of any one of them. And then, ignorant as she is of the structure she has to deal with, she is equally ignorant of the effects produced

on it by this or that treatment. What can be more inevitable than the disastrous results we see hourly arising? Lacking knowledge of mental phenomena, with their cause and consequences, her interference is frequently more mischievous than absolute passivity would have been. This and that kind of action, which are quite normal and beneficial, she perpetually thwarts; and so diminishes the child's happiness and profit, injures its temper and her own, and produces estrangement. Deeds which she thinks it desirable to encourage, she gets performed by threats and bribes, or by exciting a desire for applause: considering little what the inward motive may be, so long as the outward conduct conforms; and thus cultivating hypocrisy, and fear, and selfishness, in place of good feeling. While insisting on truthfulness, she constantly sets an example of untruth, by threatening penalties which she does not inflict. While inculcating self-control, she hourly visits on her little ones, angry scoldings for acts undeserving of them. She has not the remotest idea that in the nursery, as in the world, that alone is the truly salutary discipline which visits on all conduct, good and bad, the natural consequences—the consequences, pleasurable or painful, which in the nature of things such conduct tends to bring. Being thus without theoretic guidance, and quite incapable of guiding herself by tracing the mental processes going on in her children, her rule is impulsive, inconsistent, mischievous; and would indeed be generally ruinous, were it not that the overwhelming tendency of the growing mind to assume the moral type of the race, usually subordinates all minor influences.

And then the culture of the intellect—is not this, too, mismanaged in a similar manner? Grant that the phenomena of

intelligence conform to laws; grant that the evolution of intelligence in a child also conforms to laws; and it follows inevitably that education cannot be rightly guided without a knowledge of these laws. To suppose that you can properly regulate this process of forming and accumulating ideas, without understanding the nature of the process, is absurd. How widely, then, must teaching as it is, differ from teaching as it should be; when hardly any parents, and but few tutors, know anything about psychology. As might be expected, the established system is grievously at fault, alike in matter and in manner. While the right class of facts is withheld, the wrong class is forcibly administered in the wrong way and in the wrong order. Under that common limited idea of education which confines it to knowledge gained from books, parents thrust primers into the hands of their little ones years too soon, to their great injury. Not recognising the truth that the function of books is supplementary—that they form an indirect means to knowledge when direct means fail—a means of seeing through other men what you cannot see for yourself; teachers are eager to give second-hand facts in place of first-hand facts. Not perceiving the enormous value of that spontaneous education which goes on in early years—not perceiving that a child's restless observation, instead of being ignored or checked, should be diligently ministered to, and made as accurate and complete as possible; they insist on occupying its eyes and thoughts with things that are, for the time being, incomprehensible and repugnant. Possessed by a superstition which worships the symbols of knowledge instead of knowledge itself, they do not see that only when his acquaintance with the objects and processes of

the household, the streets, and the fields, is becoming tolerably exhaustive—only then should a child be introduced to the new sources of information which books supply: and this, not only because immediate cognition is of far greater value than mediate cognition; but also, because the words contained in books can be rightly interpreted into ideas, only in proportion to the antecedent experience of things. Observe next, that this formal instruction, far too soon commenced, is carried on with but little reference to the laws of mental development. Intellectual progress is of necessity from the concrete to the abstract. But regardless of this, highly abstract studies, such as grammar, which should come quite late, are begun quite early. Political geography, dead and uninteresting to a child, and which should be an appendage of sociological studies, is commenced betimes; while physical geography, comprehensible and comparatively attractive to a child, is in great part passed over. Nearly every subject dealt with is arranged in abnormal order: definitions and rules and principles being put first, instead of being disclosed, as they are in the order of nature, through the study of cases. And then, pervading the whole, is the vicious system of rote learning—a system of sacrificing the spirit to the letter. See the results. What with perceptions unnaturally dulled by early thwarting, and a coerced attention to books—what with the mental confusion produced by teaching subjects before they can be understood, and in each of them giving generalisations before the facts of which they are the generalisations—what with making the pupil a mere passive recipient of others' ideas, and not in the least leading him to be an active inquirer or self-instructor—and what with taxing the faculties to excess: there are very few

minds that become as efficient as they might be. Examinations being once passed, books are laid aside; the greater part of what has been acquired, being unorganised, soon drops out of recollection; what remains is mostly inert—the art of applying knowledge not having been cultivated; and there is but little power either of accurate observation or independent thinking. To all which add, that while much of the information gained is of relatively small value, an immense mass of information of transcendent value is entirely passed over.

Thus we find the facts to be such as might have been inferred *a priori*. The training of children—physical, moral, and intellectual—is dreadfully defective. And in great measure it is so, because parents are devoid of that knowledge by which this training can alone be rightly guided. What is to be expected when one of the most intricate of problems is undertaken by those who have given scarcely a thought to the principles on which its solution depends? For shoe-making or house-building, for the management of a ship or a locomotive engine, a long apprenticeship is needful. Is it, then, that the unfolding of a human being in body and mind, is so comparatively simple a process, that any one may superintend and regulate it with no preparation whatever? If not—if the process is, with one exception, more complex than any in Nature, and the task of ministering to it one of surpassing difficulty; is it not madness to make no provision for such a task? Better sacrifice accomplishments than omit this all-essential instruction. When a father, acting on false dogmas adopted without examination, has alienated his sons, driven them into rebellion by his harsh treatment, ruined them, and made himself miserable; he might reflect that

the study of Ethology would have been worth pursuing, even at the cost of knowing nothing about *Æschylus*. When a mother is mourning over a first-born that has sunk under the sequelæ of scarlet-fever—when perhaps a candid medical man has confirmed her suspicion that her child would have recovered had not its system been enfeebled by over-study—when she is prostrate under the pangs of combined grief and remorse ; it is but small consolation that she can read Dante in the original.

Thus we see that for regulating the third great division of human activities, a knowledge of the laws of life is the one thing needful. Some acquaintance with the first principles of physiology and the elementary truths of psychology, is indispensable for the right bringing up of children. We doubt not that many will read this assertion with a smile. That parents in general should be expected to acquire a knowledge of subjects so abstruse, will seem to them an absurdity. And if we proposed that an exhaustive knowledge of these subjects should be obtained by all fathers and mothers, the absurdity would indeed be glaring enough. But we do not. General principles only, accompanied by such illustrations as may be needed to make them understood, would suffice. And these might be readily taught—if not rationally, then dogmatically. Be this as it may, however, here are the indisputable facts:—that the development of children in mind and body follows certain laws ; that unless these laws are in some degree conformed to by parents, death is inevitable ; that unless they are in a great degree conformed to, there must result serious physical and mental defects ; and that only when they are completely conformed to, can a perfect maturity be reached. Judge, then,

whether all who may one day be parents, should not strive with some anxiety to learn what these laws are.

From the parental functions let us pass now to the functions of the citizen. We have here to inquire what knowledge fits a man for the discharge of these functions. It cannot be alleged that the need of knowledge fitting him for these functions is wholly overlooked ; for our school-courses contain certain studies which, nominally at least, bear upon political and social duties. Of these the only one that occupies a prominent place is History.

But, as already hinted, the information commonly given under this head, is almost valueless for purposes of guidance. Scarcely any of the facts set down in our school-histories, and very few of those contained in the more elaborate works written for adults, illustrate the right principles of political action. The biographies of monarchs (and our children learn little else) throw scarcely any light upon the science of society. Familiarity with court intrigues, plots, usurpations, or the like, and with all the personalities accompanying them, aids very little in elucidating the causes of national progress. We read of some squabble for power, that it led to a pitched battle ; that such and such were the names of the generals and their leading subordinates ; that they had each so many thousand infantry and cavalry, and so many cannon ; that they arranged their forces in this and that order ; that they manœuvred, attacked, and fell back in certain ways ; that at this part of the day such disasters were sustained, and at that such advantages gained ; that in one particular movement some leading officer fell, while in another a certain regiment was decimated ; that

after all the changing fortunes of the fight, the victory was gained by this or that army ; and that so many were killed and wounded on each side, and so many captured by the conquerors. And now, out of the accumulated details making up the narrative, say which it is that helps you in deciding on your conduct as a citizen. Supposing even that you diligently read, not only "The Fifteen Decisive Battles of the World," but accounts of all other battles that history mentions ; how much more judicious would your vote be at the next election ? "But these are facts—interesting facts," you say. Without doubt they are facts (such, at least, as are not wholly or partially fictions) ; and to many they may be interesting facts. But this by no means implies that they are valuable. Factitious or morbid opinion often gives seeming value to things that have scarcely any. A tulipomaniac will not part with a choice bulb for its weight in gold. To another man an ugly piece of cracked old china seems his most desirable possession. And there are those who give high prices for relics of celebrated murderers. Will it be contended that these tastes are any measure of value in the things that gratify them ? If not, then it must be admitted that the liking felt for certain classes of historical facts is no proof of their worth ; and that we must test their worth, as we test the worth of other facts, by asking to what uses they are applicable. Were some one to tell you that your neighbour's cat kitted yesterday, you would say the information was valueless. Fact though it may be, you would call it an utterly useless fact—a fact that could in no way influence your actions in life—a fact that would not help you in learning how to live completely. Well, apply the same test to the great mass of historical facts,

and you will get the same result. They are facts from which no conclusions can be drawn—*unorganisable* facts ; and therefore facts of no service in establishing principles of conduct, which is the chief use of facts. Read them, if you like, for amusement ; but do not flatter yourself they are instructive.

That which constitutes History, properly so called, is in great part omitted from works on the subject. Only of late years have historians commenced giving us, in any considerable quantity, the truly valuable information. As in past ages the king was everything and the people nothing ; so, in past histories the doings of the king fill the entire picture, to which the national life forms but an obscure background. While only now, when the welfare of nations rather than the rulers is becoming the dominant idea, are historians beginning to occupy themselves with the phenomena of social progress. The thing it really concerns us to know, is the natural history of society. We want all facts which help us to understand how a nation has grown and organised itself. Among these, let us of course have an account of its government ; with as little as may be of gossip about the men who officered it, and as much as possible about the structure, principles, methods, prejudices, corruptions, etc., which it exhibited ; and let this account include not only the nature and actions of the central government, but also those of local governments, down to their minutest ramifications. Let us of course also have a parallel description of the ecclesiastical government—its organisation, its conduct, its power, its relations to the State ; and accompanying this, the ceremonial, creed, and religious ideas—not only those nominally believed, but those really believed and acted upon. Let us

at the same time be informed of the control exercised by class over class, as displayed in social observances—in titles, salutations, and forms of address. Let us know, too, what were all the other customs which regulated the popular life out of doors and in-doors; including those concerning the relations of the sexes, and the relations of parents to children. The superstitions, also, from the more important myths down to the charms in common use, should be indicated. Next should come a delineation of the industrial system: showing to what extent the division of labour was carried; how trades were regulated, whether by caste, guilds, or otherwise; what was the connection between employers and employed; what were the agencies for distributing commodities; what were the means of communication; what was the circulating medium. Accompanying all which should be given an account of the industrial arts technically considered: stating the processes in use, and the quality of the products. Further, the intellectual condition of the nation in its various grades should be depicted; not only with respect to the kind and amount of education, but with respect to the progress made in science, and the prevailing manner of thinking. The degree of æsthetic culture, as displayed in architecture, sculpture, painting, dress, music, poetry, and fiction, should be described. Nor should there be omitted a sketch of the daily lives of the people—their food, their homes, and their amusements. And lastly, to connect the whole, should be exhibited the morals, theoretical and practical, of all classes: as indicated in their laws, habits, proverbs, deeds. These facts, given with as much brevity as consists with clearness and accuracy, should be so grouped and

arranged that they may be comprehended in their *ensemble*, and contemplated as mutually-dependent parts of one great whole. The aim should be so to present them that men may readily trace the *consensus* subsisting among them; with the view of learning what social phenomena co-exist with what others. And then the corresponding delineations of succeeding ages should be so managed as to show how each belief, institution, custom, and arrangement was modified; and how the *consensus* of preceding structures and functions was developed into the *consensus* of succeeding ones. Such alone is the kind of information respecting past times, which can be of service to the citizen for the regulation of his conduct. The only history that is of practical value, is what may be called Descriptive Sociology. And the highest office which the historian can discharge, is that of so narrating the lives of nations, as to furnish materials for a Comparative Sociology; and for the subsequent determination of the ultimate laws to which social phenomena conform.

But now mark, that even supposing an adequate stock of this truly valuable historical knowledge has been acquired, it is of comparatively little use without the key. And the key is to be found only in Science. In the absence of the generalisations of biology and psychology, rational interpretation of social phenomena is impossible. Only in proportion as men draw certain rude, empirical inferences respecting human nature, are they enabled to understand even the simplest facts of social life: as, for instance, the relation between supply and demand.* And if the most elementary truths of sociology cannot be reached until some knowledge is obtained of how men generally think, feel, and act under

given circumstances ; then it is manifest that there can be nothing like a wide comprehension of sociology, unless through a competent acquaintance with man in all his faculties, bodily and mental. Consider the matter in the abstract, and this conclusion is self-evident. Thus :—Society is made up of individuals ; all that is done in society is done by the combined actions of individuals ; and therefore, in individual actions only can be found the solutions of social phenomena. But the actions of individuals depend on the laws of their natures ; and their actions cannot be understood until these laws are understood. These laws, however, when reduced to their simplest expressions, prove to be corollaries from the laws of body and mind in general. Hence it follows, that biology and psychology are indispensable as interpreters of sociology. Or, to state the conclusions still more simply :—all social phenomena are phenomena of life—are the most complex manifestations of life—must conform to the laws of life—and can be understood only when the laws of life are understood. Thus, then, for the regulation of this fourth division of human activities, we are, as before, dependent on Science. Of the knowledge commonly imparted in educational courses, very little is of service for guiding a man in his conduct as a citizen. Only a small part of the history he reads is of practical value ; and of this small part he is not prepared to make proper use. He lacks not only the materials for, but the very conception of, descriptive sociology ; and he also lacks those generalisations of the organic sciences, without which even descriptive sociology can give him but small aid.

And now we come to that remaining

division of human life which includes the relaxations and amusements filling leisure hours. After considering what training best fits for self-preservation, for the obtainment of sustenance, for the discharge of parental duties, and for the regulation of social and political conduct ; we have now to consider what training best fits for the miscellaneous ends not included in these—for the enjoyments of Nature, of Literature, and of the Fine Arts, in all their forms. Postponing them as we do to things that bear more vitally upon human welfare ; and bringing everything, as we have, to the test of actual value ; it will perhaps be inferred that we are inclined to slight these less essential things. No greater mistake could be made, however. We yield to none in the value we attach to æsthetic culture and its pleasures. Without painting, sculpture, music, poetry, and the emotions produced by natural beauty of every kind, life would lose half its charm. So far from regarding the training and gratification of the tastes as unimportant, we believe that in time to come they will occupy a much larger share of human life than now. When the forces of Nature have been fully conquered to man's use—when the means of production have been brought to perfection—when labour has been economised to the highest degree—when education has been so systematised that a preparation for the more essential activities may be made with comparative rapidity—and when, consequently, there is a great increase of spare time ; then will the beautiful, both in Art and Nature, rightly fill a large space in the minds of all.

But it is one thing to approve of æsthetic culture as largely conducive to human happiness ; and another thing to admit that it is a fundamental requisite to human happiness. However important

it may be, it must yield precedence to those kinds of culture which bear directly upon daily duties. As before hinted, literature and the fine arts are made possible by those activities which make individual and social life possible; and manifestly, that which is made possible, must be postponed to that which makes it possible. A florist cultivates a plant for the sake of its flower; and regards the roots and leaves as of value, chiefly because they are instrumental in producing the flower. But while, as an ultimate product, the flower is the thing to which everything else is subordinate, the florist has learnt that the root and leaves are intrinsically of greater importance; because on them the evolution of the flower depends. He bestows every care in rearing a healthy plant; and knows it would be folly if, in his anxiety to obtain the flower, he were to neglect the plant. Similarly in the case before us. Architecture, sculpture, painting, music, and poetry, may truly be called the efflorescence of civilised life. But even supposing they are of such transcendent worth as to subordinate the civilised life out of which they grow (which can hardly be asserted), it will still be admitted that the production of a healthy civilised life must be the first condition; and that culture subserving this must occupy the highest place.

And here we see most distinctly the vice of our educational system. It neglects the plant for the sake of the flower. In anxiety for elegance, it forgets substance. While it gives no knowledge conducive to self-preservation—while of knowledge that facilitates gaining a livelihood it gives but the rudiments, and leaves the greater part to be picked up any how in after life—while for the discharge of parental func-

tions it makes not the slightest provision—and while for the duties of citizenship it prepares by imparting a mass of facts, most of which are irrelevant, and the rest without a key; it is diligent in teaching whatever adds to refinement, polish, éclat. Fully as we may admit that extensive acquaintance with modern languages is a valuable accomplishment, which, through reading, conversation, and travel, aids in giving a certain finish; it by no means follows that this result is rightly purchased at the cost of the vitally important knowledge sacrificed to it. Supposing it true that classical education conduces to elegance and correctness of style; it cannot be said that elegance and correctness of style are comparable in importance to a familiarity with the principles that should guide the rearing of children. Grant that the taste may be improved by reading the poetry written in extinct languages; yet it is not to be inferred that such improvement of taste is equivalent in value to an acquaintance with the laws of health. Accomplishments, the fine arts, *belles-lettres*, and all those things which, as we say, constitute the efflorescence of civilisation, should be wholly subordinate to that instruction and discipline on which civilisation rests. *As they occupy the leisure part of life, so should they occupy the leisure part of education.*

Recognising thus the true position of æsthetics, and holding that while the cultivation of them should form a part of education from its commencement, such cultivation should be subsidiary; we have now to inquire what knowledge is of most use to this end—what knowledge best fits for this remaining sphere of activity? To this question the answer is still the same as heretofore. Unexpected though the assertion may be, it is nevertheless true, that the highest Art of

every kind is based on Science—that without Science there can be neither perfect production nor full appreciation. Science, in that limited acceptance current in society, may not have been possessed by various artists of high repute; but acute observers as such artists have been, they have always possessed a stock of those empirical generalisations which constitute science in its lowest phase; and they have habitually fallen far below perfection, partly because their generalisations were comparatively few and inaccurate. That science necessarily underlies the fine arts, becomes manifest, *a priori*, when we remember that art products are all more or less representative of objective or subjective phenomena; that they can be good only in proportion as they conform to the laws of these phenomena; and that before they can thus conform, the artist must know what these laws are. That this *a priori* conclusion tallies with experience, we shall soon see.

Youths preparing for the practice of sculpture, have to acquaint themselves with the bones and muscles of the human frame in their distribution, attachments, and movements. This is a portion of science; and it has been found needful to impart it for the prevention of those many errors which sculptors who do not possess it commit. A knowledge of mechanical principles is also requisite; and such knowledge not being usually possessed, grave mechanical mistakes are frequently made. Take an instance. For the stability of a figure it is needful that the perpendicular from the centre of gravity—"the line of direction," as it is called—should fall within the base of support; and hence it happens, that when a man assumes the attitude known as "standing at ease," in which one leg is straightened and the other relaxed, the

line of direction falls within the foot of the straightened leg. But sculptors unfamiliar with the theory of equilibrium, not uncommonly so represent this attitude, that the line of direction falls midway between the feet. Ignorance of the law of momentum leads to analogous blunders: as witness the admired Discobolus, which, as it is posed, must inevitably fall forward the moment the quoit is delivered.

In painting, the necessity for scientific information, empirical if not rational, is still more conspicuous. What gives the grotesqueness to Chinese pictures, unless their utter disregard of the laws of appearances—their absurd linear perspective, and their want of aerial perspective? In what are the drawings of a child so faulty, if not in a similar absence of truth—an absence arising, in great part, from ignorance of the way in which the aspects of things vary with the conditions? Do but remember the books and lectures by which students are instructed; or consider the criticisms of Ruskin; or look at the doings of the Pre-Raphaelites; and you will see that progress in painting implies increasing knowledge of how effects in Nature are produced. The most diligent observation, if unaided by science, fails to preserve from error. Every painter will endorse the assertion that unless it is known what appearances must exist under given circumstances, they often will not be perceived; and to know what appearances must exist is, in so far, to understand the science of appearances. From want of science Mr. J. Lewis, careful painter as he is, casts the shadow of a lattice-window in sharply-defined lines upon an opposite wall; which he would not have done, had he been familiar with the phenomena of penumbrae. From want of science, Mr. Rosetti,

catching sight of a peculiar iridescence displayed by certain hairy surfaces under particular lights (an iridescence caused by the diffraction of light in passing the hairs), commits the error of showing this iridescence on surfaces and in positions where it could not occur.

To say that music, too, has need of scientific aid will cause still more surprise. Yet it may be shown that music is but an idealisation of the natural language of emotion; and that consequently, music must be good or bad according as it conforms to the laws of this natural language. The various inflections of voice which accompany feelings of different kinds and intensities, are the germs out of which music is developed. It is demonstrable that these inflections and cadences are not accidental or arbitrary; but that they are determined by certain general principles of vital action; and that their expressiveness depends on this. Whence it follows that musical phrases and the melodies built of them, can be effective only when they are in harmony with these general principles. It is difficult here properly to illustrate this position. But perhaps it will suffice to instance the swarms of worthless ballads that infest drawing-rooms, as compositions which science would forbid. They sin against science by setting to music, ideas that are not emotional enough to prompt musical expression; and they also sin against science by using musical phrases that have no natural relations to the ideas expressed: even where these are emotional. They are bad because they are untrue. And to say they are untrue, is to say they are unscientific.

Even in poetry the same thing holds. Like music, poetry has its root in those natural modes of expression which accompany deep feeling. Its rhythm, its strong and numerous metaphors, its

hyperboles, its violent inversions, are simply exaggerations of the traits of excited speech. To be good, therefore, poetry must pay attention to those laws of nervous action which excited speech obeys. In intensifying and combining the traits of excited speech, it must have due regard to proportion—must not use its appliances without restriction; but, where the ideas are least emotional, must use the forms of poetical expression sparingly; must use them more freely as the emotion rises; and must carry them to their greatest extent, only where the emotion reaches a climax. The entire contravention of these principles results in bombast or doggerel. The insufficient respect for them is seen in didactic poetry. And it is because they are rarely fully obeyed, that so much poetry is inartistic.

Not only is it that the artist, of whatever kind, cannot produce a truthful work without he understands the laws of the phenomena he represents; but it is that he must also understand how the minds of spectators or listeners will be affected by the several peculiarities of his work—a question in psychology. What impression any art-product generates, manifestly depends upon the mental natures of those to whom it is presented; and as all mental natures have certain characteristics in common, there must result certain corresponding general principles on which alone art-products can be successfully framed. These general principles cannot be fully understood and applied, unless the artist sees how they follow from the laws of mind. To ask whether the composition of a picture is good, is really to ask how the perceptions and feelings of observers will be affected by it. To ask whether a drama is well constructed, is to ask whether its situations are so arranged as duly to

consult the power of attention of an audience and duly to avoid overtaxing any one class of feelings. Equally in arranging the leading divisions of a poem or fiction, and in combining the words of a single sentence, the goodness of the effect depends upon the skill with which the mental energies and susceptibilities of the reader are economised. Every artist, in the course of his education and after-life, accumulates a stock of maxims by which his practice is regulated. Trace such maxims to their roots, and they inevitably lead you down to psychological principles. And only when the artist understands these psychological principles and their various corollaries, can he work in harmony with them.

We do not for a moment believe that science will make an artist. While we contend that the leading laws both of objective and subjective phenomena must be understood by him, we by no means contend that knowledge of such laws will serve in place of natural perception. Not the poet only, but the artist of every type, is born, not made. What we assert is, that innate faculty cannot dispense with the aid of organised knowledge. Intuition will do much, but it will not do all. Only when Genius is married to Science can the highest results be produced.

As we have above asserted, Science is necessary not only for the most successful production, but also for the full appreciation, of the fine arts. In what consists the greater ability of a man than of a child to perceive the beauties of a picture; unless it is in his more extended knowledge of those truths in nature or life which the picture renders? How happens the cultivated gentleman to enjoy a fine poem so much more than a boor does; if it is not because his wider acquaintance with objects and actions

enables him to see in the poem much that the boor cannot see? And if, as is here so obvious, there must be some familiarity with the things represented, before the representation can be appreciated; then the representation can be completely appreciated, only when the things represented are completely understood. The fact is, that every additional truth which a work of art expresses, gives an additional pleasure to the percipient mind—a pleasure that is missed by those ignorant of this truth. The more realities an artist indicates in any given amount of work, the more faculties does he appeal to; the more numerous ideas does he suggest; the more gratification does he afford. But to receive this gratification the spectator, listener, or reader, must know the realities which the artist has indicated; and to know these realities is to have that much science.

And now let us not overlook the further great fact, that not only does science underlie sculpture, painting, music, poetry, but that science is itself poetic. The current opinion that science and poetry are opposed, is a delusion. It is doubtless true that as states of consciousness, cognition and emotion tend to exclude each other. And it is doubtless also true that an extreme activity of the reflective powers tends to deaden the feelings; while an extreme activity of the feelings tends to deaden the reflective powers: in which sense, indeed, all orders of activity are antagonistic to each other. But it is not true that the facts of science are unpoetical; or that the cultivation of science is necessarily unfriendly to the exercise of imagination and the love of the beautiful. On the contrary, science opens up realms of poetry where to the unscientific all is a blank. Those

engaged in scientific researches constantly show us that they realise not less vividly, but more vividly, than others, the poetry of their subjects. Whoso will dip into Hugh Miller's works on geology, or read Mr. Lewes's *Seaside Studies*, will perceive that science excites poetry rather than extinguishes it. And he who contemplates the life of Goethe, must see that the poet and the man of science can co-exist in equal activity. Is it not, indeed, an absurd and almost a sacrilegious belief, that the more a man studies Nature the less he reveres it? Think you that a drop of water, which to the vulgar eye is but a drop of water, loses anything in the eye of the physicist who knows that its elements are held together by a force which, if suddenly liberated, would produce a flash of lightning? Think you that what is carelessly looked upon by the uninitiated as a mere snowflake, does not suggest higher associations to one who has seen through a microscope the wondrously-varied and elegant forms of snow-crystals? Think you that the rounded rock marked with parallel scratches, calls up as much poetry in an ignorant mind as in the mind of a geologist who knows that over this rock a glacier slid a million years ago? The truth is, that those who have never entered upon scientific pursuits are blind to most of the poetry by which they are surrounded. Whoever has not in youth collected plants and insects, knows not half the halo of interest which lanes and hedge-rows can assume. Whoever has not sought for fossils, has little idea of the poetical associations that surround the places where imbedded treasures were found. Whoever at the seaside has not had a microscope and aquarium, has yet to learn what the highest pleasures of the seaside are. Sad, indeed, is it to see how men occupy themselves with

trivialities, and are indifferent to the grandest phenomena—care not to understand the architecture of the Heavens, but are deeply interested in some contemptible controversy about the intrigues of Mary Queen of Scots!—are learnedly critical over a Greek ode, and pass by without a glance that grand epic written by the finger of God upon the strata of the Earth!

We find, then, that even for this remaining division of human activities, scientific culture is the proper preparation. We find that æsthetics in general are necessarily based upon scientific principles; and can be pursued with complete success only through an acquaintance with these principles. We find that for the criticism and due appreciation of works of art, a knowledge of the constitution of things, or in other words, a knowledge of science, is requisite. And we not only find that science is the handmaid to all forms of art and poetry, but that, rightly regarded, science is itself poetic.

Thus far our question has been, the worth of knowledge of this or that kind for purposes of guidance. We have now to judge the relative values of different kinds of knowledge for purposes of discipline. This division of our subject we are obliged to treat with comparative brevity; and happily, no very lengthened treatment of it is needed. Having found what is best for the one end, we have by implication found what is best for the other. We may be quite sure that the acquirement of those classes of facts which are most useful for regulating conduct, involves a mental exercise best fitted for strengthening the faculties. It would be utterly contrary to the beautiful economy of Nature, if one kind of culture were needed for the gaining of information

and another kind were needed as a mental gymnastic. Everywhere throughout creation we find faculties developed through the performance of those functions which it is their office to perform; not through the performance of artificial exercises devised to fit them for those functions. The Red Indian acquires the swiftness and agility which make him a successful hunter, by the actual pursuit of animals; and through the miscellaneous activities of his life, he gains a better balance of physical powers than gymnastics ever give. That skill in tracking enemies and prey which he has reached after long practice, implies a subtlety of perception far exceeding anything produced by artificial training. And similarly in all cases. From the Bushman whose eye, habitually employed in identifying distant objects that are to be pursued or fled from, has acquired a telescopic range, to the accountant whose daily practice enables him to add up several columns of figures simultaneously; we find that the highest power of a faculty results from the discharge of those duties which the conditions of life require it to discharge. And we may be certain, *à priori*, that the same law holds throughout education. The education of most value for guidance, must at the same time be the education of most value for discipline. Let us consider the evidence.

One advantage claimed for that devotion to language-learning which forms so prominent a feature in the ordinary *curriculum*, is, that the memory is thereby strengthened. This is assumed to be an advantage peculiar to the study of words. But the truth is, that the sciences afford far wider fields for the exercise of memory. It is no slight task to remember everything about our solar system; much more to remember all that is known concerning the structure of our galaxy.

The number of compound substances, to which chemistry daily adds, is so great that few, save professors, can enumerate them; and to recollect the atomic constitutions and affinities of all these compounds, is scarcely possible without making chemistry the occupation of life. In the enormous mass of phenomena presented by the Earth's crust, and in the still more enormous mass of phenomena presented by the fossils it contains, there is matter which it takes the geological student years of application to master. Each leading division of physics—sound, heat, light, electricity—includes facts numerous enough to alarm any one proposing to learn them all. And when we pass to the organic sciences, the effort of memory required becomes still greater. In human anatomy alone, the quantity of detail is so great, that the young surgeon has commonly to get it up half-a-dozen times before he can permanently retain it. The number of species of plants which botanists distinguish, amounts to some 320,000; while the varied forms of animal life with which the zoologist deals, are estimated at some 2,000,000. So vast is the accumulation of facts which men of science have before them, that only by dividing and subdividing their labours can they deal with it. To a detailed knowledge of his own division, each adds but a general knowledge of the allied ones; joined perhaps to a rudimentary acquaintance with some others. Surely, then, science, cultivated even to a very moderate extent, affords adequate exercise for memory. To say the very least, it involves quite as good a discipline for this faculty as language does.

But now mark that while, for the training of mere memory, science is as good as, if not better than, language, it has an immense superiority in the kind

of memory it trains. In the acquirement of a language, the connections of ideas to be established in the mind correspond to facts that are in great measure accidental; whereas, in the acquirement of science, the connections of ideas to be established in the mind correspond to facts that are mostly necessary. It is true that the relations of words to their meanings are in one sense natural; that the genesis of these relations may be traced back a certain distance, though rarely to the beginning; and that the laws of this genesis form a branch of mental science—the science of philology. But since it will not be contended that in the acquisition of languages, as ordinarily carried on, these natural relations between words and their meanings are habitually traced, and their laws explained; it must be admitted that they are commonly learned as fortuitous relations. On the other hand, the relations which science presents are causal relations; and, when properly taught, are understood as such. While language familiarises with non-rational relations, science familiarises with rational relations. While the one exercises memory only, the other exercises both memory and understanding.

Observe next, that a great superiority of science over language as a means of discipline, is, that it cultivates the judgment. As, in a lecture on mental education delivered at the Royal Institution, Professor Faraday well remarks, the most common intellectual fault is deficiency of judgment. "Society, speaking generally," he says, "is not only ignorant as respects education of the judgment, but it is also ignorant of its ignorance." And the cause to which he ascribes this state, is want of scientific culture. The truth of his conclusion is obvious. Correct judgment with regard to surrounding objects,

events, and consequences, becomes possible only through knowledge of the way in which surrounding phenomena depend on each other. No extent of acquaintance with the meanings of words, will guarantee correct inferences respecting causes and effects. The habit of drawing conclusions from data, and then of verifying those conclusions by observation and experiment, can alone give the power of judging correctly. And that it necessitates this habit is one of the immense advantages of science.

Not only, however, for intellectual discipline is science the best; but also for *moral* discipline. The learning of languages tends, if anything, further to increase the already undue respect for authority. Such and such are the meanings of these words, says the teacher or the dictionary. So and so is the rule in this case, says the grammar. By the pupil these dicta are received as unquestionable. His constant attitude of mind is that of submission to dogmatic teaching. And a necessary result is a tendency to accept without inquiry whatever is established. Quite opposite is the mental tone generated by the cultivation of science. Science makes constant appeal to individual reason. Its truths are not accepted on authority alone; but all are at liberty to test them—nay, in many cases, the pupil is required to think out his own conclusions. Every step in a scientific investigation is submitted to his judgment. He is not asked to admit it without seeing it to be true. And the trust in his own powers thus produced, is further increased by the uniformity with which Nature justifies his inferences when they are correctly drawn. From all which there flows that independence which is a most valuable element in character. Nor is this the only moral benefit

bequeathed by scientific culture. When carried on, as it should always be, as much as possible under the form of original research, it exercises perseverance and sincerity. As says Professor Tyndall of inductive inquiry, "it requires patient industry, and an humble and conscientious acceptance of what Nature reveals. The first condition of success is an honest receptivity and a willingness to abandon all preconceived notions, however cherished, if they be found to contradict the truth. Believe me, a self-renunciation which has something noble in it, and of which the world never hears, is often enacted in the private experience of the true votary of science."

Lastly we have to assert—and the assertion will, we doubt not, cause extreme surprise—that the discipline of science is superior to that of our ordinary education, because of the *religious* culture that it gives. Of course we do not here use the words scientific and religious in their ordinary limited acceptations; but in their widest and highest acceptations. Doubtless, to the superstitions that pass under the name of religion, science is antagonistic; but not to the essential religion which these superstitions merely hide. Doubtless, too, in much of the science that is current, there is a pervading spirit of irreligion; but not in that true science which has passed beyond the superficial into the profound.

"True science and true religion," says Professor Huxley at the close of a recent course of lectures, "are twin-sisters, and the separation of either from the other is sure to prove the death of both. Science prospers exactly in proportion as it is religious; and religion flourishes in exact proportion to the scientific depth and firmness of its basis. The great deeds of philosophers have been less the fruit of their intellect than of the direction of that intellect by an eminently religious tone of mind. Truth has yielded herself rather to their patience, their

love, their single-heartedness and their self-denial, than to their logical acumen."

So far from science being irreligious, as many think, it is the neglect of science that is irreligious—it is the refusal to study the surrounding creation that is irreligious. Take a humble simile. Suppose a writer were daily saluted with praises couched in superlative language. Suppose the wisdom, the grandeur, the beauty of his works, were the constant topics of the eulogies addressed to him. Suppose those who unceasingly uttered these eulogies on his works were content with looking at the outsides of them; and had never opened them, much less tried to understand them. What value should we put upon their praises? What should we think of their sincerity? Yet, comparing small things to great, such is the conduct of mankind in general, in reference to the Universe and its Cause. Nay, it is worse. Not only do they pass by without study, these things which they daily proclaim to be so wonderful; but very frequently they condemn as mere triflers those who give time to the observation of Nature—they actually scorn those who show any active interest in these marvels. We repeat, then, that not science, but the neglect of science, is irreligious. Devotion to science, is a tacit worship—a tacit recognition of worth in the things studied; and by implication in their Cause. It is not a mere lip-homage, but a homage expressed in actions—not a mere professed respect, but a respect proved by the sacrifice of time, thought, and labour.

Nor is it thus only that true science is essentially religious. It is religious, too, inasmuch as it generates a profound respect for, and an implicit faith in, those uniformities of action which all things disclose. By accumulated experiences the man of science acquires a

thorough belief in the unchanging relations of phenomena—in the invariable connection of cause and consequence—in the necessity of good or evil results. Instead of the rewards and punishments of traditional belief, which people vaguely hope they may gain, or escape, spite of their disobedience; he finds that there are rewards and punishments in the ordained constitution of things; and that the evil results of disobedience are inevitable. He sees that the laws to which we must submit are both inexorable and beneficent. He sees that in conforming to them, the process of things is ever towards a greater perfection and a higher happiness. Hence he is led constantly to insist on them, and is indignant when they are disregarded. And thus does he, by asserting the eternal principles of things and the necessity of obeying them, prove himself intrinsically religious.

And lastly the further religious aspect of science, that it alone can give us true conceptions of ourselves and our relation to the mysteries of existence. At the same time that it shows us all which can be known, it shows us the limits beyond which we can know nothing. Not by dogmatic assertion, does it teach the impossibility of comprehending the Ultimate Cause of things; but it leads us clearly to recognise this impossibility by bringing us in every direction to boundaries we cannot cross. It realises to us in a way which nothing else can, the littleness of human intelligence in the face of that which transcends human intelligence. While towards the traditions and authorities of men its attitude may be proud, before the impenetrable veil which hides the Absolute its attitude is humble—a true pride and a true humility. Only the sincere man of science (and by this title we do not

mean the mere calculator of distances, or analyser of compounds, or labeller of species; but him who through lower truths seeks higher, and eventually the highest)—only the genuine man of science, we say, can truly know how utterly beyond, not only human knowledge but human conception, is the Universal Power of which Nature, and Life, and Thought are manifestations.

We conclude, then, that for discipline, as well as for guidance, science is of chiefest value. In all its effects, learning the meanings of things, is better than learning the meanings of words. Whether for intellectual, moral, or religious training, the study of surrounding phenomena is immensely superior to the study of grammars and lexicons.

Thus to the question we set out with—What knowledge is of most worth?—the uniform reply is—Science. This is the verdict on all the counts. For direct self-preservation, or the maintenance of life and health, the all-important knowledge is—Science. For that indirect self-preservation which we call gaining a livelihood, the knowledge of greatest value is—Science. For the due discharge of parental functions, the proper guidance is to be found only in—Science. For that interpretation of national life, past and present, without which the citizen cannot rightly regulate his conduct, the indispensable key is—Science. Alike for the most perfect production and present enjoyment of art in all its forms, the needful preparation is still—Science, and for purposes of discipline—intellectual, moral, religious—the most efficient study is, once more—Science. The question which at first seemed so perplexed, has become, in the course of our inquiry, comparatively simple. We have not to estimate the degrees of

importance of different orders of human activity, and different studies as severally fitting us for them; since we find that the study of Science, in its most comprehensive meaning, is the best preparation for all these orders of activity. We have not to decide between the claims of knowledge of great though conventional value, and knowledge of less though intrinsic value; seeing that the knowledge which proves to be of most value in all other respects, is intrinsically most valuable: its worth is not dependent upon opinion, but is as fixed as is the relation of man to the surrounding world. Necessary and eternal as are its truths, all Science concerns all mankind for all time. Equally at present and in the remotest future, must it be of incalculable importance for the regulation of their conduct, that men should understand the science of life, physical, mental, and social; and that they should understand all other science as a key to the science of life.

And yet this study immensely transcending all other in importance, is that which, in an age of boasted education, receives the least attention. While what we call civilisation could never have arisen had it not been for science; science forms scarcely an appreciable element in our so-called civilised training. Though to the progress of science we owe it, that millions find support where once there was food only for thousands; yet of these millions but a few thousands pay any respect to that which has made their existence possible. Though increasing knowledge of the properties and relations of things has not only enabled wandering tribes to grow into populous nations, but has^d given to the countless members of these populous nations, comforts and pleasures which their few naked ancestors never even

conceived, or could have believed, yet is this kind of knowledge only now receiving a grudging recognition in our highest educational institutions. To the slowly growing acquaintance with the uniform co-existences and sequences of phenomena—to the establishment of invariable laws, we owe our emancipation from the grossest superstitions. But for science we should be still worshipping fetishes; or, with hecatombs of victims, propitiating diabolical deities. And yet this science, which, in place of the most degrading conceptions of things, has given us some insight into the grandeurs of creation, is written against in our theologies and frowned upon from our pulpits.

Paraphrasing an Eastern fable, we may say that in the family of knowledges, Science is the household drudge, who, in obscurity, hides unrecognised perfections. To her has been committed all the work; by her skill, intelligence, and devotion, have all conveniences and gratifications been obtained; and while ceaselessly ministering to the rest, she has been kept in the background, that her haughty sisters might flaunt their fripperies in the eyes of the world. The parallel holds yet further. For we are fast coming to the *dénouement*, when the positions will be changed; and while these haughty sisters sink into merited neglect, Science, proclaimed as highest alike in worth and beauty, will reign supreme.

CHAPTER II.

INTELLECTUAL EDUCATION

THERE cannot fail to be a relationship between the successive systems of education, and the successive social states

with which they have co-existed. Having a common origin in the national mind, the institutions of each epoch, whatever be their special functions, must have a family likeness. When men received their creed and its interpretations from an infallible authority deigning no explanations, it was natural that the teaching of children should be purely dogmatic. While "believe and ask no questions" was the maxim of the Church, it was fitly the maxim of the school. Conversely, now that Protestantism has gained for adults a right of private judgment and established the practice of appealing to reason, there is harmony in the change that has made juvenile instruction a process of exposition addressed to the understanding. Along with political despotism, stern in its commands, ruling by force of terror, visiting trifling crimes with death, and implacable in its vengeance on the disloyal, there necessarily grew up academic discipline similarly harsh—a discipline of multiplied injunctions and blows for every breach of them—a discipline of unlimited autocracy upheld by rods, and ferules, and the black-hole. On the other hand, the increase of political liberty, the abolition of laws restricting individual action, and the amelioration of the criminal code, have been accompanied by a kindred progress towards non-coercive education: the pupil is hampered by fewer restraints, and other means than punishments are used to govern him. In those ascetic days when men, acting on the greatest-misery principle, held that the more gratifications they denied themselves the more virtuous they were, they, as a matter of course, considered that the best education which most thwarted the wishes of their children, and cut short all spontaneous activity with—"You mustn't do so." While, on the contrary, now that happiness is

coming to be regarded as a legitimate aim—now that hours of labour are being shortened and popular recreations provided; parents and teachers are beginning to see that most childish desires may rightly be gratified, that childish sports should be encouraged, and that the tendencies of the growing mind are not altogether so diabolical as was supposed. The age in which all believed that trades must be established by bounties and prohibitions; that manufacturers needed their materials and qualities and prices to be prescribed; and that the value of money could be determined by law; was an age which unavoidably cherished the notions that a child's mind could be made to order; that its powers were to be imparted by the schoolmaster; that it was a receptacle into which knowledge was to be put, and there built up after the teacher's ideal. In this free-trade era, however, when we are learning that there is much more self-regulation in things than was supposed; that labour, and commerce, and agriculture, and navigation, can do better without management than with it; that political governments, to be efficient, must grow up from within and not be imposed from without; we are also being taught that there is a natural process of mental evolution which is not to be disturbed without injury; that we may not force on the unfolding mind our artificial forms; but that psychology, also, discloses to us a law of supply and demand, to which, if we would not do harm, we must conform. Thus, alike in its oracular dogmatism, in its harsh discipline, in its multiplied restrictions, in its professed asceticism, and in its faith in the devices of men, the old educational régime was akin to the social systems with which it was contemporaneous; and similarly in the reverse of these characteristics, our modern

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modes of culture correspond to our more liberal religious and political institutions.

But there remain further parallelisms to which we have not yet adverted: that, namely, between the processes by which these respective changes have been wrought out; and that between the several states of heterogeneous opinion to which they have led. Some centuries ago there was uniformity of belief—religious, political, and educational. All men were Romanists, all were Monarchists, all were disciples of Aristotle; and no one thought of calling in question that grammar-school routine under which all were brought up. The same agency has in each case replaced this uniformity by a constantly-increasing diversity. That tendency towards assertion of the individuality, which, after contributing to produce the great Protestant movement, has since gone on to produce an ever-increasing number of sects—that tendency which initiated political parties, and out of the two primary ones has, in these modern days, evolved a multiplicity to which every year adds—that tendency which led to the Baconian rebellion against the schools, and has since originated here and abroad, sundry new systems of thought—is a tendency which, in education also, has caused divisions and the accumulation of methods. As external consequences of the same internal change, these processes have necessarily been more or less simultaneous. The decline of authority, whether papal, philosophic, kingly, or tutoral, is essentially one phenomenon; in each of its aspects a leaning towards free action is seen alike in the working out of the change itself, and in the new forms of theory and practice to which the change has given birth.

While many will regret this multiplication of schemes of juvenile culture, the

catholic observer will discern in it a means of ensuring the final establishment of a rational system. Whatever may be thought of theological dissent, it is clear that dissent in education results in facilitating inquiry by the division in labour. Were we in possession of the true method, divergence from it would, of course, be prejudicial; but the true method having to be found, the efforts of numerous independent seekers carrying out their researches in different directions, constitute a better agency for finding it than any that could be devised. Each of them struck by some new thought which probably contains more or less of basis in facts—each of them zealous on behalf of his plan, fertile in expedients to test its correctness, and untiring in his efforts to make known its success—each of them merciless in his criticism on the rest; there cannot fail, by composition of forces, to be a gradual approximation of all towards the right course. Whatever portion of the normal method any one has discovered, must, by the constant exhibition of its results, force itself into adoption; whatever wrong practices he has joined with it must, by repeated experiment and failure, be exploded. And by this aggregation of truths and elimination of errors, there must eventually be developed a correct and complete body of doctrine. Of the three phases through which human opinion passes—the unanimity of the ignorant, the disagreement of the inquiring, and the unanimity of the wise—it is manifest that the second is the parent of the third. They are not sequences in time only, they are sequences in causation. However impatiently, therefore, we may witness the present conflict of educational systems, and however much we may regret its accompanying evils, we must recognise it as a

transition stage needful to be passed through, and beneficent in its ultimate effects.

Meanwhile, may we not advantageously take stock of our progress? After fifty years of discussion, experiment, and comparison of results, may we not expect a few steps towards the goal to be already made good? Some old methods must by this time have fallen out of use; some new ones must have become established; and many others must be in process of general abandonment or adoption. Probably we may see in these various changes, when put side by side, similar characteristics—may find in them a common tendency; and so, by inference, may get a clue to the direction in which experience is leading us, and gather hints how we may achieve yet further improvements. Let us then, as a preliminary to a deeper consideration of the matter, glance at the leading contrasts between the education of the past and that of the present.

The suppression of every error is commonly followed by a temporary ascendancy of the contrary one; and so it happened, that after the ages when physical development alone was aimed at, there came an age when culture of the mind was the sole solicitude—when children had lesson-books put before them at between two and three years old, and the getting of knowledge was thought the one thing needful. As, further, it usually happens that after one of these reactions the next advance is achieved by co-ordinating the antagonist errors, and perceiving that they are opposite sides of one truth; so, we are now coming to the conviction that body and mind must both be cared for, and the whole being unfolded. The forcing-system has been by many given up; and

precocity is discouraged. People are beginning to see that the first requisite to success in life is to be a good animal. The best brain is found of little service, if there be not enough vital energy to work it; and hence to obtain the one by sacrificing the source of the other, is now considered a folly—a folly which the eventual failure of juvenile prodigies constantly illustrates. Thus we are discovering the wisdom of the saying, that one secret in education is “to know how wisely to lose time.”

The once universal practice of learning by rote is daily falling into discredit. All modern authorities condemn the old mechanical way of teaching the alphabet. The multiplication table is now frequently taught experimentally. In the acquirement of languages, the grammar-school plan is being superseded by plans based on the spontaneous process followed by the child in gaining its mother tongue. Describing the methods there used, the *Reports on the Training School at Battersea* say:—“The instruction in the whole preparatory course is chiefly oral, and is illustrated as much as possible by appeals to nature.” And so throughout. The rote-system, like all other systems of its age, made more of the forms and symbols than of the things symbolised. To repeat the words correctly was everything; to understand their meaning, nothing; and thus the spirit was sacrificed to the letter. It is at length perceived that, in this case as in others, such a result is not accidental but necessary—that in proportion as there is attention to the signs, there must be inattention to the things signified; or that, as Montaigne long ago said—*Sçavoir par cœur n'est pas sçavoir*.

Along with rote-teaching, is declining also the nearly-allied teaching by rules.

The particulars first, and then the generalisations, is the new method—a method, as the Battersea School Reports remark, which, though “the reverse of the method usually followed, which consists in giving the pupil the rule first,” is yet proved by experience to be the right one. Rule-teaching is now condemned as imparting a merely empirical knowledge—as producing an appearance of understanding without the reality. To give the net product of inquiry, without the inquiry that leads to it, is found to be both enervating and inefficient. General truths to be of due and permanent use, must be earned. “Easy come easy go,” is a saying as applicable to knowledge as to wealth. While rules, lying isolated in the mind—not joined to its other contents as out-growths from them—are continually forgotten; the principles which those rules express piecemeal, become, when once reached by the understanding, enduring possessions. While the rule-taught youth is at sea when beyond his rules, the youth instructed in principles solves a new case as readily as an old one. Between a mind of rules and a mind of principles, there exists a difference such as that between a confused heap of materials, and the same materials organised into a complete whole, with all its parts bound together. Of which types this last has not only the advantage that its constituent parts are better retained, but the much greater advantage that it forms an efficient agent for inquiry, for independent thought, for discovery—ends for which the first is useless. Nor let it be supposed that this is a simile only: it is the literal truth. The union of facts into generalisations is the organisation of knowledge, whether considered as an objective phenomenon or a subjective one; and the mental grasp may be

measured by the extent to which this organisation is carried.

From the substitution of principles for rules, and the necessarily co-ordinate practice of leaving abstractions untaught till the mind has been familiarised with the facts from which they are abstracted, has resulted the postponement of some once early studies to a late period. This is exemplified in the abandonment of that intensely stupid custom, the teaching of grammar to children. As M. Marcel says:—“It may without hesitation be affirmed that grammar is not the stepping-stone, but the finishing instrument.” As Mr. Wyse argues:—“Grammar and Syntax are a collection of laws and rules. Rules are gathered from practice; they are the results of induction to which we come by long observation and comparison of facts. It is, in fine, the science, the philosophy of language. In following the process of nature, neither individuals nor nations ever arrive at the science *first*. A language is spoken, and poetry written, many years before either a grammar or prosody is even thought of. Men did not wait till Aristotle had constructed his logic, to reason.” In short, as grammar was made after language, so ought it to be taught after language: an inference which all who recognise the relationship between the evolution of the race and that of the individual, will see to be unavoidable.

Of new practices that have grown up during the decline of these old ones, the most important is the systematic culture of the powers of observation. After long ages of blindness, men are at last seeing that the spontaneous activity of the observing faculties in children, has a meaning and a use. What was once thought mere purposeless action, or play, or mischief, as the case might be, is now

recognised as the process of acquiring a knowledge on which all after-knowledge is based. Hence the well-conceived but ill-conducted system of *object-lessons*. The saying of Bacon, that physics is the mother of the sciences, has come to have a meaning in education. Without an accurate acquaintance with the visible and tangible properties of things, our conceptions must be erroneous, our inferences fallacious, and our operations unsuccessful. "The education of the senses neglected, all after education partakes of a drowsiness, a haziness, an insufficiency which it is impossible to cure." Indeed, if we consider it, we shall find that exhaustive observation is an element in all great success. It is not to artists, naturalists, and men of science only, that it is needful; it is not only that the physician depends on it for the correctness of his diagnosis, and that to the engineer it is so important that some years in the workshop are prescribed to him; but we may see that the philosopher, also, is fundamentally one who *observes* relationships of things which others had overlooked, and that the poet, too, is one who *sees* the fine facts in nature which all recognise when pointed out, but did not before remark. Nothing requires more to be insisted on than that vivid and complete impressions are all-essential. No sound fabric of wisdom can be woven out of a rotten raw material.

While the old method of presenting truths in the abstract has been falling out of use, there has been a corresponding adoption of the new method of presenting them in the concrete. The rudimentary facts of exact science are now being learnt by direct intuition, as textures, and tastes, and colours are learnt. Employing the ball-frame for first lessons in arithmetic, exemplifies

this. It is well illustrated, too, in Professor De Morgan's mode of explaining the decimal notation. M. Marcel, rightly repudiating the old system of tables, teaches weights and measures by referring to the actual yard and foot, pound and ounce, gallon and quart; and lets the discovery of their relationships be experimental. The use of geographical models and models of the regular bodies, etc., as introductory to geography and geometry respectively, are facts of the same class. Manifestly, a common trait of these methods is, that they carry each child's mind through a process like that which the mind of humanity at large has gone through. The truths of number, of form, of relationship in position, were all originally drawn from objects; and to present these truths to the child in the concrete, is to let him learn them as the race learnt them. By and by, perhaps, it will be seen that he cannot possibly learn them in any other way; for that if he is made to repeat them as abstractions, the abstractions can have no meaning for him, until he finds that they are simply statements of what he intuitively discerns.

But of all the changes taking place, the most significant is the growing desire to make the acquirement of knowledge pleasurable rather than painful—a desire based on the more or less distinct perception, that at each age the intellectual action which a child likes is a healthy one for it; and conversely. There is a spreading opinion that the rise of an appetite for any kind of information, implies that the unfolding mind has become fit to assimilate it, and needs it for purposes of growth; and that, on the other hand, the disgust felt towards such information is a sign either that it is prematurely presented, or that it is presented in an indigestible form. Hence

the efforts to make early education amusing, and all education interesting. Hence the lectures on the value of play. Hence the defence of nursery rhymes and fairy tales. Daily we more and more conform our plans to juvenile opinion. Does the child like this or that kind of teaching?—does he take to it? we constantly ask. "His natural desire of variety should be indulged," says M. Marcel; "and the gratification of his curiosity should be combined with his improvement." "Lessons," he again remarks, "should cease before the child evinces symptoms of weariness." And so with later education. Short breaks during school-hours, excursions into the country, amusing lectures, choral songs—in these and many like traits, the change may be discerned. Asceticism is disappearing out of education as out of life; and the usual test of political legislation—its tendency to promote happiness—is beginning to be, in a great degree, the test of legislation for the school and the nursery. What now is the common characteristic of these several changes? Is it not an increasing conformity to the methods of Nature? The relinquishment of early forcing, against which Nature rebels, and the leaving of the first years for exercise of the limbs and senses, show this. The superseding of rote-learned lessons by lessons orally and experimentally given, like those of the field and playground, shows this. The disuse of rule-teaching, and the adoption of teaching by principles—that is, the leaving of generalisations until there are particulars to base them on—show this. The system of object-lessons shows this. The teaching of the rudiments of science in the concrete instead of the abstract, shows this. And above all, this tendency is shown in the variously-directed

efforts to present knowledge in attractive forms, and so to make the acquirement of it pleasurable. For, as it is the order of Nature in all creatures that the gratification accompanying the fulfilment of needful functions serves as a stimulus to their fulfilment—as, during the self-education of the young child, the delight taken in the biting of corals and the pulling to pieces of toys, becomes the prompter to actions which teach it the properties of matter; it follows that, in choosing the succession of subjects and the modes of instruction which most interest the pupil, we are fulfilling Nature's behests, adjusting our proceedings to the laws of life.

Thus, then, we are on the highway towards the doctrine long ago enunciated by Pestalozzi, that alike in its order and its methods, education must conform to the natural process of mental evolution—that there is a certain sequence in which the faculties spontaneously develop, and a certain kind of knowledge which each requires during its development; and that it is for us to ascertain this sequence, and supply this knowledge. All the improvements above alluded to are partial applications of this general principle. A nebulous perception of it now prevails among teachers; and it is daily more insisted on in educational works. "The method of nature is the archetype of all methods," says M. Marcel. "The vial principle in the pursuit is to enable the pupil rightly to instruct himself," writes Mr. Wyse. The more science familiarises us with the constitution of things, the more do we see in them an inherent self-sufficiency. A higher knowledge tends continually to limit our interference with the processes of life. As in medicine the old "heroic treatment" has given place to mild treatment, and often no treatment save a

normal regimen—as we have found that it is not needful to mould bodies of babes by bandaging them in papoose-fashion or otherwise—as in gaols it is being discovered that no cunningly-devised discipline of ours is so efficient in producing reformation as the natural discipline of self-maintenance by productive labour; so in education, we are finding that success is to be achieved only by making our measures subservient to that spontaneous unfolding which all minds go through in their progress to maturity.

Of course, this fundamental principle of tuition, that the arrangement of matter and method must correspond with the order of evolution and mode of activity of the faculties—a principle so obviously true, that once stated it seems almost self-evident—has never been wholly disregarded. Teachers have unavoidably made their school-courses coincide with it in some degree, for the simple reason that education is possible only on that condition. Boys were never taught the rule-of-three until they had learnt addition. They were not set to write exercises before they had got into their copy-books. Conic sections have always been preceded by Euclid. But the error of the old methods consists in this, that they do not recognise in detail what they are obliged to recognise in general. Yet the principle applies throughout. If from the time when a child is able to conceive two things as related in position, years must elapse before it can form a true concept of the Earth, as a sphere made up of land and sea, covered with mountains, forests, rivers, and cities, revolving on its axis, and sweeping round the Sun—if it gets from the one concept to the other by degrees—if the intermediate concepts which it forms are consecutively larger and more compli-

cated; is it not manifest that there is a general succession through which alone it can pass; that each larger concept is made by the combination of smaller ones, and presupposes them; and that to present any of these compound concepts before the child is in possession of its constituent ones, is only less absurd than to present the final concept of the series before the initial one. In the mastering of every subject some course of increasingly complex ideas has to be gone through. The evolution of the corresponding faculties consists in the assimilation of these; which, in any true sense, is impossible without they are put into the mind in the normal order. And when this order is not followed, the result is, that they are received with apathy or disgust; and that unless the pupil is intelligent enough eventually to fill up the gaps himself, they lie in his memory as dead facts, capable of being turned to little or no use.

“But why trouble ourselves about any *curriculum* at all?” it may be asked. “If it be true that the mind like the body has a predetermined course of evolution—if it unfolds spontaneously—if its successive desires for this or that kind of information arise when these are severally required for its nutrition—if there thus exists in itself a prompter to the right species of activity at the right time; why interfere in any way? Why not leave children *wholly* to the discipline of nature?—why not remain quite passive and let them get knowledge as they best can?—why not be consistent throughout?” This is an awkward-looking question. Plausibly implying as it does, that a system of complete *laissez-faire* is the logical outcome of the doctrines set forth, it seems to furnish a disproof of them by *reductio ad absurdum*.

In truth, however, they do not, when rightly understood, commit us to any such untenable position. A glance at the physical analogies will clearly show this. It is a general law of life that the more complex the organism to be produced, the longer the period during which it is dependent on a parent organism for food and protection. The difference between the minute, rapidly-formed, and self-moving spore of a conferva, and the slowly-developed seed of a tree, with its multiplied envelopes and large stock of nutriment laid by to nourish the germ during its first stages of growth, illustrates this law in its application to the vegetal world. Among animals we may trace it in a series of contrasts from the monad whose spontaneously-divided halves are as self-sufficing the moment after their separation as was the original whole; up to man, whose offspring not only passes through a protracted gestation, and subsequently long depends on the breast for sustenance; but after that must have its food artificially administered; must, when it has learned to feed itself, continue to have bread, clothing, and shelter provided; and does not acquire the power of complete self-support until a time varying from fifteen to twenty years after its birth. Now this law applies to the mind as to the body. For mental pabulum also, every higher creature, and especially man, is at first dependent on adult aid. Lacking the ability to move about, the babe is almost as powerless to get materials on which to exercise its perceptions as it is to get supplies for its stomach. Unable to prepare its own food, it is in like manner unable to reduce many kinds of knowledge to a fit form for assimilation. The language through which all higher truths are to be gained, it wholly derives from those surrounding

it. And we see in such an example as the Wild Boy of Aveyron, the arrest of development that results when no help is received from parents and nurses. Thus, in providing from day to day the right kind of facts, prepared in the right manner, and giving them in due abundance at appropriate intervals, there is as much scope for active ministration to a child's mind as to its body. In either case, it is the chief function of parents to see that the *conditions* requisite to growth are maintained. And as, in supplying aliment, and clothing, and shelter, they may fulfil this function without at all interfering with the spontaneous development of the limbs and viscera, either in their order or mode; so, they may supply sounds for imitation, objects for examination, books for reading, problems for solution, and, if they use neither direct nor indirect coercion, may do this without in any way disturbing the normal process of mental evolution; or rather, may greatly facilitate that process. Hence the admission of the doctrines enunciated does not, as some might argue, involve the abandonment of teaching; but leaves ample room for an active and elaborate course of culture.

Passing from generalities to special considerations, it is to be remarked that in practice, the Pestalozzian system seems scarcely to have fulfilled the promise of its theory. We hear of children not at all interested in its lessons,—disgusted with them rather; and, so far as we can gather, the Pestalozzian schools have not turned out any unusual proportion of distinguished men: if even they have reached the average. We are not surprised at this. The success of every appliance depends mainly upon the intelligence with which

it is used. It is a trite remark that, having the choicest tools, an unskilled artisan will botch his work; and bad teachers will fail even with the best methods. Indeed, the goodness of the method becomes in such case a cause of failure; as, to continue the simile, the perfection of the tool becomes in undisciplined hands a source of imperfection in results. A simple, unchanging, almost mechanical routine of tuition, may be carried out by the commonest intellects, with such small beneficial effect as it is capable of producing; but a complete system—a system as heterogeneous in its appliances as the mind in its faculties—a system proposing a special means for each special end, demands for its right employment powers such as few teachers possess. The mistress of a dame-school can hear spelling-lessons; and any hedge-schoolmaster can drill boys in the multiplication table. But to teach spelling rightly, by using the powers of the letters instead of their names, or to instruct in numerical combinations by experimental synthesis, a modicum of understanding is needful; and to pursue a like rational course throughout the entire range of studies, asks an amount of judgment, of invention, of intellectual sympathy, of analytical faculty, which we shall never see applied to it while the tutorial office is held in such small esteem. True education is practicable only by a true philosopher. Judge then, what prospect a philosophical method now has of being acted out! knowing so little as we yet do of psychology, and ignorant as our teachers are of at little, what chance has a system which requires psychology for its basis? Further hindrance and discouragement arisen from confounding the Pestalozzian principle with the forms in which it has been embodied. Because particular

plans have not answered expectation, discredit has been cast upon the doctrine associated with them: no inquiry being made whether these plans truly conform to the doctrine. Judging as usual by the concrete rather than the abstract, men have blamed the theory for the bunglings of the practice. It is as though the first futile attempt to construct a steam-engine had been held to prove that steam could not be used as a motive power. Let it be constantly borne in mind that while right in his fundamental ideas, Pestalozzi was not therefore right in all his applications of them. As described even by his admirers, Pestalozzi was a man of partial intuitions—a man who had occasional flashes of insight; rather than a man of systematic thought. His first great success at Stantz was achieved when he had no books or appliances of ordinary teaching, and when “the only object of his attention was to find out at each moment what instruction his children stood peculiarly in need of, and what was the best manner of connecting it with the knowledge they already possessed.” Much of his power was due, not to calmly reasoned-out plans of culture, but to his profound sympathy, which gave him a quick perception of childish needs and difficulties. He lacked the ability logically to co-ordinate and develop the truths which he thus from time to time laid hold of; and had in great measure to leave this to his assistants, Kruesi, Tobler, Buss, Niederer, and Schmid. The result is, that in their details his own plans, and those vicariously devised, contain numerous crudities and inconsistencies. His nursery-method, described in *The Mother's Manual*, beginning as it does with a nomenclature of the different parts of the body, and proceeding next to specify their relative

positions, and next their connections, may be proved not at all in accordance with the initial stages of mental evolution. His process of teaching the mother-tongue by formal exercises in the meanings of words in the construction of sentences, is quite needless, and must entail on the pupil loss of time, labour and happiness. His proposed lessons in geography are utterly unpestalozzian. And often where his plans are essentially sound, they are either incomplete or vitiated by some remnant of the old régime. While, therefore, we would defend in its entire extent the general doctrine which Pestalozzi inaugurated, we think great evil likely to result from an uncritical reception of his specific methods. That tendency, constantly exhibited by mankind, to canonise the forms and practices along with which any great truth has been bequeathed to them—their liability to prostrate their intellects before the prophet, and swear by his every word—their proneness to mistake the clothing of the idea for the idea itself; renders it needful to insist strongly upon the distinction between the fundamental principle of the Pestalozzian system, and the set of expedients devised for its practice; and to suggest that while the one may be considered as established, the other is probably nothing but an adumbration of the normal course. Indeed, on looking at the state of our knowledge, we may be quite sure that this is the case. Before educational methods can be made to harmonise in character and arrangement with the faculties in their mode and order of unfolding, it is first needful that we ascertain with some completeness how the faculties *do* unfold. At present we have acquired, on this point, only a few general notions. These general notions must be developed in detail—must be

transformed into a multitude of specific propositions, before we can be said to possess that *science* on which the *art* of education must be based. And then, when we have definitely made out in what succession and in what combinations the mental powers become active, it remains to choose out of the many possible ways of exercising each of them, that which best conforms to its natural mode of action. Evidently, therefore, it is not to be supposed that even our most advanced modes of teaching are the right ones, or nearly the right ones.

Bearing in mind then this distinction between the principle and the practice of Pestalozzi, and inferring from the grounds assigned that the last must necessarily be very defective, the reader will rate at its true worth the dissatisfaction with the system which some have expressed; and will see that the realisation of the Pestalozzian idea remains to be achieved. Should he argue, however, from what has just been said, that no such realisation is at present practicable, and that all effort ought to be devoted to the preliminary inquiry; we reply, that though it is not possible for a scheme of culture to be perfected either in matter or form until a rational psychology has been established, it is possible, with the aid of certain guiding principles, to make empirical approximations towards a perfect scheme. To prepare the way for further research we will now specify these principles. Some of them have been more or less distinctly implied in the foregoing pages; but it will be well here to state them all in logical order.

1. That in education we should proceed from the simple to the complex, is a truth which has always been to some

extent acted upon : not professedly, indeed, nor by any means consistently. The mind develops. Like all things that develop it progresses from the homogeneous to the heterogeneous ; and a normal training system, being an objective counterpart of this subjective process, must exhibit a like progression. Moreover thus interpreting it, we may see that this formula has much wider applications than at first appears. For its *rationale* involves, not only that we should proceed from the single to the combined in the teaching of each branch of knowledge ; but that we should do the like with knowledge as a whole. As the mind, consisting at first of but few active faculties, has its later-completed faculties successively brought into play, and ultimately comes to have all its faculties in simultaneous action ; it follows that our teaching should begin with but few subjects at once, and successively adding to these, should finally carry on all subjects abreast. Not only in its details should education proceed from the simple to the complex, but in its *ensemble* also.

2. The development of the mind, as all other development, is an advance from the indefinite to the definite. In common with the rest of the organism, the brain reaches its finished structure only at maturity ; and in proportion as its structure is unfinished, its actions are wanting in precision. Hence like the first movements and the first attempts at speech, the first perceptions and thoughts are extremely vague. As from a rudimentary eye, discerning only the difference between light and darkness, the progress is to an eye that distinguishes kinds and gradations of colour, and details of form, with the greatest exactness ; so, the intellect as a whole and in each faculty, beginning with the rudest

discriminations among objects and actions, advances towards discriminations of increasing nicety and distinctness. To this general law our educational course and methods must conform. It is not practicable, nor would it be desirable if practicable, to put precise ideas into the undeveloped mind. We may indeed at an early age communicate the verbal forms in which such ideas are wrapped up ; and teachers, who habitually do this, suppose that when the verbal forms have been correctly learnt, the ideas which should fill them have been acquired. But a brief cross-examination of the pupil proves the contrary. It turns out either that the words have been committed to memory with little or no thought about their meaning, or else that the perception of their meaning which has been gained is a very cloudy one. Only as the multiplication of experiences gives materials for definite conceptions—only as observation year by year discloses the less conspicuous attributes which distinguish things and processes previously confounded together—only as each class of co-existences and sequences becomes familiar through the recurrence of cases coming under it—only as the various classes of relations get accurately marked off from each other by mutual limitation ; can the exact definitions of advanced knowledge become truly comprehensible. Thus in education we must be content to set out with crude notions. These we must aim to make gradually clearer by facilitating the acquisition of experiences such as will correct, first their greatest errors, and afterwards their successively less marked errors. And the scientific formulæ must be given only as fast as the conceptions are perfected.

3. To say that our lessons ought to start from the concrete and end in the

abstract, may be considered as in part a repetition of the first of the foregoing principles. Nevertheless it is a maxim that must be stated: if with no other view, then with the view of showing in certain cases what are truly the simple and the complex. For unfortunately there has been much misunderstanding on this point. General formulas which men have devised to express groups of details, and which have severally simplified their conceptions by uniting many facts into one fact, they have supposed must simplify the conceptions of a child also. They have forgotten that a generalisation is simple only in comparison with the whole mass of particular truths it comprehends—that it is more complex than any one of these truths taken singly—that only after many of these single truths have been acquired, does the generalisation ease the memory and help the reason—and that to a mind not possessing these single truths it is necessarily a mystery. Thus confounding two kinds of simplification, teachers have constantly erred by setting out with “first principles”: a proceeding essentially, though not apparently, at variance with the primary rule; which implies that the mind should be introduced to principles through the medium of examples, and so should be led from the particular to the general—from the concrete to the abstract.

4. The education of the child must accord both in mode and arrangement with the education of mankind, considered historically. In other words, the genesis of knowledge in the individual, must follow the same course as the genesis of knowledge in the race. In strictness, this principle may be considered as already expressed by implication; since both being processes of evolution, must conform to those same

general laws of evolution above insisted on, and must therefore agree with each other. Nevertheless this particular parallelism is of value for the specific guidance it affords. To M. Comte we believe society owes the enunciation of it; and we may accept this item of his philosophy without at all committing ourselves to the rest. This doctrine may be upheld by two reasons, quite independent of any abstract theory; and either of them sufficient to establish it. One is deducible from the law of hereditary transmission as considered in its wider consequences. For if it be true that men exhibit likeness to ancestry, both in aspect and character—if it be true that certain mental manifestations, as insanity, occur in successive members of the same family at the same age—if, passing from individual cases in which the traits of many dead ancestors mixing with those of a few living ones greatly obscure the law, we turn to national types, and remark how the contrasts between them are persistent from age to age—if we remember that these respective types came from a common stock, and that hence the present marked differences between them must have arisen from the action of modifying circumstances upon successive generations who severally transmitted the accumulated effects to their descendants—if we find the differences to be now organic, so that a French child grows into a French man even when brought up among strangers—and if the general fact thus illustrated is true of the whole nature, intellect inclusive; then it follows that if there be an order in which the human race has mastered its various kinds of knowledge, there will arise in every child an aptitude to acquire these kinds of knowledge in the same order. So that even were the order intrinsically

indifferent, it would facilitate education to lead the individual mind through the steps traversed by the general mind. But the order is *not* intrinsically indifferent ; and hence the fundamental reason why education should be a repetition of civilisation-in little. It is provable both that the historical sequence was, in its main outlines, a necessary one ; and that the causes which determined it apply to the child as to the race. Not to specify these causes in detail, it will suffice here to point out that as the mind of humanity placed in the midst of phenomena and striving to comprehend them, has, after endless comparisons, speculations, experiments, and theories, reached its present knowledge of each subject by a specific route ; it may rationally be inferred that the relationship between mind and phenomena is such as to prevent this knowledge from being reached by any other route ; and that as each child's mind stands in this same relationship to phenomena, they can be accessible to it only through the same route. Hence in deciding upon the right method of education, an inquiry into the method of civilisation will help to guide us.

5. One of the conclusions to which such an inquiry leads, is, that in each branch of instruction we should proceed from the empirical to the rational. During human progress, every science is evolved out of its corresponding art. It results from the necessity we are under, both individually and as a race, of reaching the abstract by way of the concrete, that there must be practice and an accruing experience with its empirical generalisations, before there can be science. Science is organised knowledge ; and before knowledge can be organised, some of it must be possessed. Every study, therefore, should have a purely experimental introduction ;

and only after an ample fund of observations has been accumulated, should reasoning begin. As illustrative applications of this rule, we may instance the modern course of placing grammar, not before language, but after it ; or the ordinary custom of prefacing perspective by practical drawing. By and by further applications of it will be indicated.

6. A second corollary from the foregoing general principle, and one which cannot be too strenuously insisted on, is, that in education the process of self-development should be encouraged to the uttermost. Children should be led to make their own investigations, and to draw their own inferences. They should be *told* as little as possible, and induced to *discover* as much as possible. Humanity has progressed solely by self-instruction ; and that to achieve the best results, each mind must progress somewhat after the same fashion, is continually proved by the marked success of self-made men. Those who have been brought up under the ordinary school-drill, and have carried away with them the idea that education is practicable only in that style, will think it hopeless to make children their own teachers. If, however, they will consider that the all-important knowledge of surrounding objects which a child gets in its early years, is got without help—if they will remember that the child is self-taught in the use of its mother tongue—if they will estimate the amount of that experience of life, that out-of-school wisdom, which every boy gathers for himself—if they will mark the unusual intelligence of the uncared-for London *gamin*, as shown in whatever directions his faculties have been tasked—if, further, they will think how many minds have struggled up unaided, not only through

the mysteries of our irrationally-planned *curriculum*, but through hosts of other obstacles besides; they will find it a not unreasonable conclusion, that if the subjects be put before him in right order and right form, any pupil of ordinary capacity will surmount his successive difficulties with but little assistance. Who indeed can watch the ceaseless observation, and inquiry, and inference going on in a child's mind, or listen to its acute remarks on matters within the range of its faculties, without perceiving that these powers it manifests, if brought to bear systematically upon studies *within the same range*, would readily master them without help? This need for perpetual telling results from our stupidity, not from the child's. We drag it away from the facts in which it is interested, and which it is actively assimilating of itself. We put before it facts far too complex for it to understand; and therefore distasteful to it. Finding that it will not voluntarily acquire these facts, we thrust them into its mind by force of threats and punishment. By thus denying the knowledge it craves, and cramming it with knowledge it cannot digest, we produce a morbid state of its faculties; and a consequent disgust for knowledge in general. And when, as a result partly of the stolid indolence we have brought on, and partly of still-continued unfitness in its studies, the child can understand nothing without explanation, and becomes a mere passive recipient of our instruction, we infer that education must necessarily be carried on thus. Having by our method induced helplessness, we make the helplessness a reason for our method. Clearly then, the experience of pedagogues cannot rationally be quoted against the system we are advocating. And whoever sees this, will see that we may safely

follow the discipline of Nature throughout—may, by a skilful ministration, make the mind as self-developing in its latter stages as it is in its earlier ones; and that only by doing this can we produce the highest power and activity.

7. As a final test by which to judge any plan of culture, should come the question,—Does it create a pleasurable excitement in the pupils? When in doubt whether a particular mode or arrangement is or is not more in harmony with the foregoing principles than some other, we may safely abide by this criterion. Even when, as considered theoretically, the proposed course seems the best, yet if it produces no interest, or less interest than some other course, we should relinquish it; for a child's intellectual instincts are more trustworthy than our reasonings. In respect to the knowing-faculties, we may confidently trust in the general law, that under normal conditions, healthful action is pleasurable, while action which gives pain is not healthful. Though at present very incompletely conformed to by the emotional nature, yet by the intellectual nature, or at least by those parts of it which the child exhibits, this law is almost wholly conformed to. The repugnances to this and that study which vex the ordinary teacher, are not innate, but result from his unwise system. Fellenberg says, "Experience has taught me that *indolence* in young persons is so directly opposite to their natural disposition to activity, that unless it is the consequence of bad education, it is almost invariably connected with some constitutional defect." And the spontaneous activity to which children are thus prone, is simply the pursuit of those pleasures which the healthful exercise of the faculties gives. It is true that some of the higher mental powers, as yet but

little developed in the race, and congenitally possessed in any considerable degree only by the most advanced, are indisposed to the amount of exertion required of them. But these, in virtue of their very complexity, will, in a normal course of culture, come last into exercise; and will therefore have no demands made on them until the pupil has arrived at an age when ulterior motives can be brought into play, and an indirect pleasure made to counterbalance a direct displeasure. With all faculties lower than these, however, the immediate gratification consequent on activity, is the normal stimulus; and under good management the only needful stimulus. When we have to fall back on some other, we must take the fact as evidence that we are on the wrong track. Experience is daily showing with greater clearness, that there is always a method to be found productive of interest—even of delight; and it ever turns out that this is the method proved by all other tests to be the right one.

With most, these guiding principles will weigh but little if left in this abstract form. Partly, therefore, to exemplify their application, and partly with a view of making sundry specific suggestions, we propose now to pass from the theory of education to the practice of it.

It was the opinion of Pestalozzi, and one which has ever since his day been gaining ground, that education of some kind should begin from the cradle. Whoever has watched with any discernment, the wide-eyed gaze of the infant at surrounding objects, knows very well that education *does* begin thus early, whether we intend it or not; and that these fingerings and suckings of everything it can lay hold of, these open-mouthed listenings to every sound, are first steps in the series which ends in the discovery

of unseen planets, the invention of calculating engines, the production of great paintings, or the composition of symphonies and operas. This activity of the faculties from the very first, being spontaneous and inevitable, the question is whether we shall supply in due variety the materials on which they may exercise themselves; and to the question so put, none but an affirmative answer can be given. As before said, however, agreement with Pestalozzi's theory does not involve agreement with his practice; and here occurs a case in point. Treating of instruction in spelling he says:—

The spelling-book ought, therefore, to contain all the sounds of the language, and these ought to be taught in every family from the earliest infancy. The child who learns his spelling-book ought to repeat them to the infant in the cradle, before it is able to pronounce even one of them, so that they may be deeply impressed upon its mind by frequent repetition.

Joining this with the suggestions for "a nursery method," set down in his *Mother's Manual*, in which he makes the names, positions, connections, numbers, properties, and uses of the limbs and body his first lessons, it becomes clear that Pestalozzi's notions on early mental development were too crude to enable him to devise judicious plans. Let us consider the course which Psychology dictates.

The earliest impressions which the mind can assimilate, are the undecomposable sensations produced by resistance, light, sound, etc. Manifestly, decomposable states of consciousness cannot exist before the states of consciousness out of which they are composed. There can be no idea of form until some familiarity with light in its gradations and qualities, or resistance in its different intensities, has been acquired; for, as has been long known, we recognise visible form by means of varieties of light,

and tangible form by means of varieties of resistance. Similarly, no articulate sound is cognisable until the inarticulate sounds which go to make it up have been learned. And thus must it be in every other case. Following, therefore, the necessary law of progression from the simple to the complex, we should provide for the infant a sufficiency of objects presenting different degrees and kinds of resistance; a sufficiency of objects reflecting different amounts and qualities of light, and a sufficiency of sounds contrasted in their loudness, their pitch and their *timbre*. How fully this *à priori* conclusion is confirmed by infantile instincts, all will see on being reminded of the delight which every young child has in biting its toys, in feeling its brother's bright jacket-buttons, and pulling papa's whiskers—how absorbed it becomes in gazing at any gaudily-painted object, to which it applies the word “pretty,” when it can pronounce it, wholly because of the bright colours—and how its face broadens into a laugh at the tattlings of its nurse, the snapping of a visitor's fingers, or any sound which it has not before heard. Fortunately, the ordinary practices of the nursery fulfil these early requirements of education to a considerable degree. Much, however, remains to be done; and it is of more importance that it should be done than at first appears. Every faculty during that spontaneous activity which accompanies its evolution, is capable of receiving more vivid impressions than at any other period. Moreover, as these simplest elements have to be mastered, and as the mastery of them whenever achieved must take time, it becomes an economy of time to occupy this first stage of childhood, during which no other intellectual action is possible, in gaining a complete familiarity with them in all their modifications.

Nor let us omit the fact, that both temper and health will be improved by the continual gratification resulting from a due supply of these impressions which every child so greedily assimilates. Space, could it be spared, might here be well filled by some suggestions towards a more systematic ministration to those simplest of the perceptions. But it must suffice to point out that any such ministration, recognising the general law of evolution from the indefinite to the definite, should proceed upon the corollary that in the development of every faculty, markedly contrasted impressions are the first to be distinguished; that hence sounds greatly differing in loudness and pitch, colours very remote from each other, and substances widely unlike in hardness or texture, should be the first supplied; and that in each case the progression must be by slow degrees to impressions more nearly allied.

Passing on to object-lessons, which manifestly form a natural continuation of this primary culture of the senses, it is to be remarked, that the system commonly pursued is wholly at variance with the method of Nature, as exhibited alike in infancy, in adult life, and in the course of civilisation. “The child,” says M. Marcel, “must be *shown* how all the parts of an object are connected, etc.”; and the various manuals of these object-lessons severally contain lists of the facts which the child is to be *told* respecting each of the things put before it. Now it needs but a glance at the daily life of the infant to see that all the knowledge of things which is gained before the acquirement of speech, is self-gained—that the qualities of hardness and weight associated with certain appearances, the possession of particular forms and colours by particular persons, the production of special sounds by animals of special

aspects, are phenomena which it observes for itself. In manhood too, when there are no longer teachers at hand, the observations and inferences hourly required for guidance, must be made unhelped; and success in life depends upon the accuracy and completeness with which they are made. Is it probable then, that while the process displayed in the evolution of humanity at large, is repeated alike by the infant and the man, a reverse process must be followed during the period between infancy and manhood? and that too, even in so simple a thing as learning the properties of objects? Is it not obvious, on the contrary, that one method must be pursued throughout? And is not Nature perpetually thrusting this method upon us, if we had but the wit to see it, and the humility to adopt it? What can be more manifest than the desire of children for intellectual sympathy? Mark how the infant sitting on your knee thrusts into your face the toy it holds, that you may look at it. See when it makes a creak with its wet finger on the table, how it turns and looks at you; does it again, and again looks at you; thus saying as clearly as it can—"Hear this new sound." Watch the elder children coming into the room exclaiming—"Mamma, see what a curious thing," "Mamma, look at this," "Mamma, look at that": a habit which they would continue, did not the silly mamma tell them not to tease her. Observe that, when out with the nurse-maid, each little one runs up to her with the new flower it has gathered, to show her how pretty it is, and to get her also, to say it is pretty. Listen to the eager volubility with which every urchin describes any novelty he has been to see; if only he can find some one who will attend with any interest. Does not the induction lie on the surface? Is it

not clear that we must conform our course to these intellectual instincts—that we must just systematise the natural process—that we must listen to all the child has to tell us about each object; must induce it to say everything it can think of about such object; must occasionally draw its attention to facts it has not yet observed, with the view of leading it to notice them itself whenever they recur; and must go on by and by to indicate or supply new series of things for a like exhaustive examination? Note the way in which, on this method, the intelligent mother conducts her lessons. Step by step she familiarises her little boy with the names of the simpler attributes, hardness, softness, colour, taste, size: in doing which she finds him eagerly help by bringing this to show her that it is red, and the other to make her feel that it is hard, as fast as she gives him words for these properties. Each additional property, as she draws his attention to it in some fresh thing which he brings her, she takes care to mention in connection with those he already knows; so that by the natural tendency to imitate, he may get into the habit of repeating them one after another. Gradually as there occur cases in which he omits to name one or more of the properties he has become acquainted with, she introduces the practice of asking him whether there is not something more that he can tell her about the thing he has got. Probably he does not understand. After letting him puzzle a while she tells him; perhaps laughing at him a little for his failure. A few recurrences of this and he perceives what is to be done. When next she says she knows something more about the object than he has told her, his pride is roused; he looks at it intently; he thinks over all that he has heard; and

the problem being easy, presently finds it out. He is full of glee at his success, and she sympathises with him. In common with every child, he delights in the discovery of his powers. He wishes for more victories, and goes in quest of more things about which to tell her. As his faculties unfold she adds quality after quality to his list: progressing from hardness and softness to roughness and smoothness, from colour to polish, from simple bodies to composite ones—thus constantly complicating the problem as he gains competence, constantly taxing his attention and memory to a greater extent, constantly maintaining his interest by supplying him with new impressions such as his mind can assimilate, and constantly gratifying him by conquests over such small difficulties as he can master. In doing this she is manifestly but following out that spontaneous process which was going on during a still earlier period—simply aiding self-evolution; and is aiding it in the mode suggested by the boy's instinctive behaviour to her. Manifestly, too, the course she is adopting is the one best calculated to establish a habit of exhaustive observation; which is the professed aim of these lessons. To tell a child this and to show it the other, is not to teach it how to observe, but to make it a mere recipient of another's observations: a proceeding which weakens rather than strengthens its powers of self-instruction—which deprives it of the pleasures resulting from successful activity—which presents this all-attractive knowledge under the aspect of formal tuition—and which thus generates that indifference and even disgust not unfrequently felt towards these object-lessons. On the other hand, to pursue the course above described is simply to guide the intellect to its appropriate food; to join

with the intellectual appetites their natural adjuncts—*amour propre* and the desire for sympathy; to induce by the union of all these an intensity of attention which insures perceptions both vivid and complete; and to habituate the mind from the beginning to that practice of self-help which it must ultimately follow.

Object-lessons should not only be carried on after quite a different fashion from that commonly pursued, but should be extended to a range of things far wider, and continued to a period far later, than now. They should not be limited to the contents of the house; but should include those of the fields and the hedges, the quarry and the seashore. They should not cease with early childhood; but should be so kept up during youth, as insensibly to merge into the investigations of the naturalist and the man of science. Here again we have but to follow Nature's leadings. Where can be seen an intenser delight than that of children picking up new flowers and watching new insects; or hoarding pebbles and shells? And who is there but perceives that by sympathising with them they may be led on to any extent of inquiry into the qualities and structures of these things? Every botanist who has had children with him in the woods and lanes must have noticed how eagerly they joined in his pursuits, how keenly they searched out plants for him, how intently they watched while he examined them, how they overwhelmed him with questions. The consistent follower of Bacon—the "servant and interpreter of nature," will see that we ought modestly to adopt the course of culture thus indicated. Having become familiar with the simpler properties of inorganic objects, the child should by the same process be led on to

an exhaustive examination of the things it picks up in its daily walks—the less complex facts they present being alone noticed at first: in plants, the colours, numbers, and forms of the petals, and shapes of the stalks and leaves; in insects, the numbers of the wings, legs, and antennæ, and their colours. As these become fully appreciated and invariably observed, further facts may be successively introduced: in the one case, the numbers of stamens and pistils, the forms of the flowers, whether radial or bilateral in symmetry, the arrangement and character of the leaves, whether opposite or alternate, stalked or sessile, smooth or hairy, serrated, toothed, or crenate; in the other, the divisions of the body, the segments of the abdomen, the markings of the wings, the number of joints in the legs, and the forms of the smaller organs—the system pursued throughout, being that of making it the child's ambition to say respecting everything it finds, all that can be said. Then when a fit age has been reached, the means of preserving these plants, which have become so interesting in virtue of the knowledge obtained of them, may as a great favour be supplied; and eventually, as a still greater favour, may also be supplied the apparatus needful for keeping the larvæ of our common butterflies and moths through their transformations—a practice which, as we can personally testify, yields the highest gratification; is continued with ardour for years; when joined with the entomological collection, adds immense interest to Saturday-afternoon rambles; and forms an admirable introduction to the study of physiology.

We are quite prepared to hear from many that all this is throwing away time and energy; and that children would be much better occupied in writing their

copies or learning their pence-tables, and so fitting themselves for the business of life. We regret that such crude ideas of what constitutes education, and such a narrow conception of utility, should still be prevalent. Saying nothing on the need for a systematic culture of the perceptions and the value of the practices above inculcated as subserving that need, we are prepared to defend them even on the score of the knowledge gained. If men are to be mere cits, mere porers over ledgers, with no ideas beyond their trades—if it is well that they should be as the cockney whose conception of rural pleasures extends no further than sitting in a tea-garden smoking pipes and drinking porter; or as the squire who thinks of woods as places for shooting in, of uncultivated plants as nothing but weeds, and who classifies animals into game, vermin, and stock—then indeed it is needless to learn any thing that does not directly help to replenish the till and fill the larder. But if there is a more worthy aim for us than to be drudges—if there are other uses in the things around us than their power to bring money—if there are higher faculties to be exercised than acquisitive and sensual ones—if the pleasures which poetry and art and science and philosophy can bring are of any moment; then is it desirable that the instinctive inclination which every child shows to observe natural beauties and investigate natural phenomena, should be encouraged. But this gross utilitarianism which is content to come into the world and quit it again without knowing what kind of a world it is or what it contains, may be met on its own ground. It will by and by be found that a knowledge of the laws of life is more important than any other knowledge whatever—that the laws of life underlie not only all bodily and mental

processes, but by implication all the transactions of the house and the street, all commerce, all politics, all morals—and that therefore without a comprehension of them, neither personal nor social conduct can be rightly regulated. It will eventually be seen to, that the laws of life are essentially the same throughout the whole organic creation; and further, that they cannot be properly understood in their complex manifestations until they have been studied in their simpler ones. And when this is seen, it will be also seen that in aiding the child to acquire the out-of-door information for which it shows so great an avidity, and in encouraging the acquisition of such information throughout youth, we are simply inducing it to store up the raw material of future organisation—the facts that will one day bring home to it with due force, those great generalisations of science by which actions may be rightly guided.

The spreading recognition of drawing as an element of education, is one among many signs of the more rational views on mental culture now beginning to prevail. Once more it may be remarked that teachers are at length adopting the course which Nature has perpetually been pressing on their notice. The spontaneous attempts made by children to represent the men, houses, trees, and animals around them—on a slate if they can get nothing better, or with lead-pencil on paper if they can beg them—are familiar to all. To be shown through a picture-book is one of their highest gratifications; and as usual, their strong imitative tendency presently generates in them the ambition to make pictures themselves also. This effort to depict the striking things they see, is a further instinctive exercise of the perceptions—a means whereby still

greater accuracy and completeness of observation are induced. And alike by trying to interest us in their discoveries of the sensible properties of things, and by their endeavours to draw, they solicit from us just that kind of culture which they most need.

Had teachers been guided by Nature's hints, not only in making drawing a part of education but in choosing modes of teaching it, they would have done still better than they have done. What is that the child first tries to represent? Things that are large, things that are attractive in colour, things round which its pleasurable associations most cluster—human beings from whom it has received so many emotions; cows and dogs which interest by the many phenomena they present; houses that are hourly visible and strike by their size and contrast of parts. And which of the processes of representation gives it most delight? Colouring. Paper and pencil are good in default of something better; but a box of paints and a brush—these are the treasures. The drawing of outlines immediately becomes secondary to colouring—is gone through mainly with a view to the colouring; and if leave can be got to colour a book of prints, how great is the favour! Now, ridiculous as such a position will seem to drawing-masters, who postpone colouring and who teach form by a dreary discipline of copying lines, we believe that the course of culture thus indicated is the right one. The priority of colour to form, which, as already pointed out, has a psychological basis, should be recognised from the beginning; and from the beginning also, the things imitated should be real. That greater delight in colour which is not only conspicuous in children but persists in most persons throughout life, should be

continuously employed as the natural stimulus to the mastery of the comparatively difficult and unattractive form : the pleasure of the subsequent tinting, should be the prospective reward for the labour of delineation. And these efforts to represent interesting actualities, should be encouraged ; in the conviction that as, by a widening experience, simpler and more practicable objects become interesting, they too will be attempted ; and that so a gradual approximation will be made towards imitations having some resemblance to the realities. The extreme indefiniteness which, in conformity with the law of evolution, these first attempts exhibit, is anything but a reason for ignoring them. No matter how grotesque the shapes produced ; no matter how daubed and glaring the colours. The question is not whether the child is producing good drawings. The question is, whether it is developing its faculties. It has first to gain some command over its fingers, some crude notions of likeness ; and this practice is better than any other for these ends, since it is the spontaneous and interesting one. During early childhood no formal drawing-lessons are possible. Shall we therefore repress, or neglect to aid, these efforts of self-culture ? or shall we encourage and guide them as normal exercises of the perceptions and the powers of manipulation ? If by furnishing cheap woodcuts to be painted, and simple contour-maps to have their boundary lines tinted, we can not only pleasurably draw out the faculty of colour, but can incidentally produce some familiarity with the outlines of things and countries, and some ability to move the brush steadily ; and if by the supply of tempting objects we can keep up the instinctive practice of making representations, however rough ; it must hap-

pen that when the age for lessons in drawing is reached, there will exist a facility that would else have been absent. Time will have been gained ; and trouble both to teacher and pupil, saved.

From what has been said, it may be readily inferred that we condemn the practice of drawing from copies ; and still more so that formal discipline in making straight lines and curved lines and compound lines, with which it is the fashion of some teachers to begin. We regret that the Society of Arts has recently, in its series of manuals on " Rudimentary Art-Instruction," given its countenance to an elementary drawing-book, which is the most vicious in principle that we have seen. We refer to the " Outline from Outline, or from the Flat," by John Bell, sculptor. As explained in the prefatory note, this publication proposes " to place before the student a simple, yet logical mode of instruction " ; and to this end sets out with a number of definitions thus :—

" A simple line in drawing is a thin mark drawn from one point to another.

" Lines may be divided, as to their nature in drawing, into two classes :

" 1. *Straight*, which are marks that go the shortest road between two points, as A B.

" 2. Or *Curved*, which are marks which do not go the shortest road between two points, as C D."

And so the introduction progresses to horizontal lines, perpendicular lines, oblique lines, angles of the several kinds, and the various figures which lines and angles make up. The work is, in short, a grammar of form, with exercises. And thus the system of commencing with a dry analysis of elements, which, in the teaching of language, has been exploded, is to be re-instituted in the teaching of drawing. We are to set out with the definite, instead of with the indefinite. The abstract is to be preliminary to the

concrete. Scientific conceptions are to precede empirical experiences. That this is an inversion of the normal order, we need scarcely repeat. It has been well said concerning the custom of prefacing the art of speaking any tongue by a drilling in the parts of speech and their functions, that it is about as reasonable as prefacing the art of walking by a course of lessons on the bones, muscles, and nerves of the legs; and much the same thing may be said of the proposal to preface the art of representing objects, by a nomenclature and definitions of the lines which they yield on analysis. These technicalities are alike repulsive and needless. They render the study distasteful at the very outset; and all with the view of teaching that which, in the course of practice, will be learnt unconsciously. Just as the child incidentally gathers the meanings of ordinary words from the conversations going on around it, without the help of dictionaries; so, from the remarks on objects, pictures, and its own drawings, will it presently acquire, not only without effort but even pleasurable, those same scientific terms which, when taught at first, are a mystery and a weariness.

If any dependence is to be placed on the general principles of education that have been laid down, the process of learning to draw should be throughout continuous with those efforts of early childhood, described above as so worthy of encouragement. By the time that the voluntary practice thus initiated has given some steadiness of hand, and some tolerable ideas of proportion, there will have arisen a vague notion of body as presenting its three dimensions in perspective. And when, after sundry abortive, Chinese-like attempts to render this appearance on paper, there has grown up a pretty clear perception of the thing to

be done, and a desire to do it, a first lesson in empirical perspective may be given by means of the apparatus occasionally used in explaining perspective as a science. This sounds alarming; but the experiment is both comprehensible and interesting to any boy or girl of ordinary intelligence. A plate of glass so framed as to stand vertically on the table, being placed before the pupil, and a book or like simple object laid on the other side of it, he is requested, while keeping the eye in one position, to make ink-dots on the glass, so that they may coincide with, or hide, the corners of this object. He is next told to join these dots by lines; on doing which he perceives that the lines he makes hide, or coincide with, the outlines of the object. And then by putting a sheet of paper on the other side of the glass, it is made manifest to him that the lines he has thus drawn represent the object as he saw it. They not only look like it, but he perceives that they must be like it, because he made them agree with its outlines; and by removing the paper he can convince himself that they do agree with its outlines. The fact is new and striking; and serves him as an experimental demonstration, that lines of certain lengths, placed in certain directions on a plane, can represent lines of other lengths, and having other directions, in space. By gradually changing the position of the object, he may be led to observe how some lines shorten and disappear, while others come into sight and lengthen. The convergence of parallel lines, and, indeed, all the leading facts of perspective, may, from time to time, be similarly illustrated to him. If he has been duly accustomed to self-help, he will gladly, when it is suggested, attempt to draw one of these outlines on paper, by the eye only; and

it may soon be made an exciting aim to produce unassisted, a representation as like as he can to one subsequently sketched on the glass. Thus without the unintelligent, mechanical practice of copying other drawings, but by a method at once simple and attractive—rational, yet not abstract,—a familiarity with the linear appearances of things, and a faculty of rendering them, may be step by step acquired. To which advantages add these:—that even thus early the pupil learns, almost unconsciously, the true theory of a picture (namely, that it is a delineation of objects as they appear when projected on a plane placed between them and the eye); and that when he reaches a fit age for commencing scientific perspective, he is already thoroughly acquainted with the facts which form its logical basis.

As exhibiting a rational mode of conveying primary conceptions in geometry, we cannot do better than quote the following passage from Mr. Wyse:—

A child has been in the habit of using cubes for arithmetic; let him use them also for the elements of geometry. I would begin with solids, the reverse of the usual plan. It saves all the difficulty of absurd definitions, and bad explanations on points, lines, and surfaces, which are nothing but abstractions.....A cube presents many of the principal elements of geometry; it at once exhibits points, straight lines, parallel lines, angles, parallelograms, &c., &c. These cubes are divisible into various parts. The pupil has already been familiarised with such divisions in numeration, and he now proceeds to a comparison of their several parts, and of the relation of these parts to each other.From thence he advances to globes, which furnish him with elementary notions of the circle, of curves generally, &c., &c.

Being tolerably familiar with solids, he may now substitute planes. The transition may be made very easy. Let the cube, for instance, be cut into thin divisions, and placed on paper; he will then see as many plane rectangles as he has divisions; so with all the others. Globes may be treated in the same manner; he will thus see

how surfaces really are generated, and be enabled to abstract them with facility in every solid.

He has thus acquired the alphabet and reading of geometry. He now proceeds to write it.

The simplest operation, and therefore the first, is merely to place these planes on a piece of paper, and pass the pencil round them. When this has been frequently done, the plane may be put at a little distance, and the child required to copy it, and so on.

A stock of geometrical conceptions having been obtained, in some such manner as this recommended by Mr. Wyse, a further step may be taken, by introducing the practice of testing the correctness of figures drawn by eye: thus both exciting an ambition to make them exact, and continually illustrating the difficulty of fulfilling that ambition. There can be little doubt that geometry had its origin (as, indeed, the word implies) in the methods discovered by artisans and others, of making accurate measurements for the foundations of buildings, areas of enclosures, and the like; and that its truths came to be treasured up, merely with a view to their immediate utility. They should be introduced to the pupil under analogous relationships. In cutting out pieces for his card-houses, in drawing ornamental diagrams for colouring, and in those various instructive occupations which an inventive teacher will lead him into, he may for a length of time be advantageously left, like the primitive builder, to tentative processes; and so will learn through experience the difficulty of achieving his aims by the unaided senses. When, having meanwhile undergone a valuable discipline of the perceptions, he has reached a fit age for using a pair of compasses, he will, while duly appreciating these as enabling him to verify his ocular guesses, be still hindered by the imperfections of the approximative method. In this stage he may be left

for a further period : partly as being yet too young for anything higher ; partly because it is desirable that he should be made to feel still more strongly the want of systematic contrivances. If the acquisition of knowledge is to be made continuously interesting ; and if, in the early civilisation of the child, as in the early civilisation of the race, science is valued only as ministering to art ; it is manifest that the proper preliminary to geometry, is a long practice in those constructive processes, which geometry will facilitate. Observe that here, too, Nature points the way. Children show a strong propensity to cut out things in paper, to make, to build—a propensity which, if encouraged and directed, will not only prepare the way for scientific conceptions, but will develop those powers of manipulation in which most people are so deficient.

When the observing and inventive faculties have attained the requisite power, the pupil may be introduced to empirical geometry ; that is—geometry dealing with methodical solutions, but not with the demonstrations of them. Like all other transitions in education, this should be made not formally but incidentally ; and the relationship to constructive art should still be maintained. To make, out of cardboard, a tetrahedron like one given to him, is a problem which will interest the pupil, and serve as a convenient starting-point. In attempting this, he finds it needful to draw four equilateral triangles arranged in special positions. Being unable in the absence of an exact method to do this accurately, he discovers on putting the triangles into their respective positions, that he cannot make their sides fit ; and that their angles do not meet at the apex. He may now be shown how, by describing a couple of circles, each

of these triangles may be drawn with perfect correctness and without guessing ; and after his failure he will value the information. Having thus helped him to the solution of the first problem, with the view of illustrating the nature of geometrical methods, he is in future to be left to solve the questions put to him as best he can. To bisect a line, to erect a perpendicular, to describe a square, to bisect an angle, to draw a line parallel to a given line, to describe a hexagon, are problems which a little patience will enable him to find out. And from these he may be led on step by step to more complex questions : all of which, under judicious management, he will puzzle through unhelped. Doubtless, many of those brought up under the old *régime*, will look upon this assertion sceptically. We speak from facts, however ; and those neither few nor special. We have seen a class of boys become so interested in making out solutions to such problems, as to look forward to their geometry-lesson as a chief event of the week. Within the last month, we have heard of one girls' school, in which some of the young ladies voluntarily occupy themselves with geometrical questions out of school-hours ; and of another, where they not only do this, but where one of them is begging for problems to find out during the holidays : both which facts we state on the authority of the teacher. Strong proofs, these, of the practicability and the immense advantage of self-development ! A branch of knowledge which, as commonly taught, is dry and even repulsive, is thus, by following the method of Nature, made extremely interesting and profoundly beneficial. We say profoundly beneficial, because the effects are not confined to the gaining of geometrical facts, but often

revolutionise the whole state of mind. It has repeatedly occurred that those who have been stupefied by the ordinary school-drill—by its abstract formulas, its wearisome tasks, its cramming—have suddenly had their intellects roused by thus ceasing to make them passive recipients, and inducing them to become active discoverers. The discouragement caused by bad teaching having been diminished by a little sympathy, and sufficient perseverance excited to achieve a first success, there arises a revulsion of feeling affecting the whole nature. They no longer find themselves incompetent; they, too, can do something. And gradually as success follows success, the incubus of despair disappears, and they attack the difficulties of their other studies with a courage insuring conquest.

A few weeks after the foregoing remarks were originally published, Professor Tyndall, in a lecture at the Royal Institution "On the Importance of the study of Physics as a Branch of Education," gave some conclusive evidence to the same effect. His testimony, based on personal observation, is of such great value that we cannot refrain from quoting it. Here it is.

One of the duties which fell to my share, during the period to which I have referred, was the instruction of a class in mathematics, and I usually found that Euclid and the ancient geometry generally, when addressed to the understanding, formed a very attractive study for youth. But it was my habitual practice to withdraw the boys from the routine of the book, and to appeal to their self-power in the treatment of questions not comprehended in that routine. At first, the change from the beaten track usually excited a little aversion: the youth felt like a child amid strangers; but in no single instance have I found this aversion to continue. When utterly disheartened, I have encouraged the boy by that anecdote of Newton, where he attributes the difference between him and other men, mainly to his own patience; or of Mirabeau, when he ordered his servant, who had

stated something to be impossible, never to use that stupid word again. Thus cheered, he has returned to his task with a smile, which perhaps had something of doubt in it, but which, nevertheless, evinced a resolution to try again. I have seen the boy's eye brighten, and at length, with a pleasure of which the ecstasy of Archimedes was but a simple expansion, heard him exclaim, "I have it, sir." The consciousness of self-power, thus awakened, was of immense value; and animated by it the progress of the class was truly astonishing. It was often my custom to give the boys their choice of pursuing their propositions in the book, or of trying their strength at others not to be found there. Never in a single instance have I known the book to be chosen. I was ever ready to assist when I deemed help needful, but my offers of assistance were habitually declined. The boys had tasted the sweets of intellectual conquest and demanded victories of their own. I have seen their diagrams scratched on the walls, cut into the beams upon their play-ground, and numberless other illustrations of the living interest they took in the subject. For my own part, as far as experience in teaching goes, I was a mere fledgling: I knew nothing of the rules of pedagogics, as the Germans name it; but I adhered to the spirit indicated at the commencement of this discourse, and endeavoured to make geometry a *means* and not a *branch* of education. The experiment was successful, and some of the most delightful hours of my existence have been spent in making the vigorous and cheerful expansion of mental power, when appealed to in the manner I have described.

This empirical geometry which presents an endless series of problems, should be continued along with other studies for years; and may throughout be advantageously accompanied by those concrete applications of its principles which serve as its preliminary. After the cube, the octahedron, and the various forms of pyramid and prism have been mastered, may come the more complex regular bodies—the dodecahedron and icosahedron—to construct which out of single pieces of cardboard, requires considerable ingenuity. From these, the transition may naturally be made to such modified forms of the

regular bodies as are met with in crystals—the truncated cube, the cube with its dihedral as well as its solid angles truncated, the octahedron and the various prisms as similarly modified: in imitating which numerous forms assumed by different metals and salts, an acquaintance with the leading facts of mineralogy will be incidentally gained.*

After long continuance in exercises of this kind, rational geometry, as may be supposed, presents no obstacles. Habituated to contemplate relationships of form and quantity, and vaguely perceiving from time to time the necessity of certain results as reached by certain means, the pupil comes to regard the demonstrations of Euclid as the missing supplements to his familiar problems. His well-disciplined faculties enable him easily to master its successive propositions, and to appreciate their value; and he has the occasional gratification of finding some of his own methods proved to be true. Thus he enjoys what is to the unprepared a dreary task. It only remains to add, that his mind will presently arrive at a fit condition for that most valuable of all exercises for the reflective faculties—the making of original demonstrations. Such theorems as those appended to the successive books of the Messrs. Chambers's Euclid, will soon become practicable to him; and in proving them, the process of self-development will be not intellectual only, but moral.

To continue these suggestions much further, would be to write a detailed treatise on education, which we do not purpose. The foregoing outlines of plans for exercising the perceptions in early

childhood, for conducting object-lessons, for teaching drawing and geometry, must be considered simply as illustrations of the method dictated by the general principles previously specified. We believe that on examination they will be found not only to progress from the simple to the complex, from the indefinite to the definite, from the concrete to the abstract, from the empirical to the rational; but to satisfy the further requirements, that education shall be a repetition of civilisation in little, that it shall be as much as possible a process of self-evolution, and that it shall be as pleasurable. The fulfilment of all these conditions by one type of method, tends alike to verify the conditions, and to prove that type of method the right one. Mark too, that this method is the logical outcome of the tendency characterising all modern improvements in tuition—that it is but an adoption in full of the natural system which they adopt partially—that it displays this complete adoption of the natural system, both by conforming to the above principles, and by following the suggestions which the unfolding mind itself gives: facilitating its spontaneous activities, and so aiding the developments which Nature is busy with. Thus there seems abundant reason to conclude, that the mode of procedure above exemplified, closely approximates to the true one.

A few paragraphs must be added in further inculcation of the two general principles, that are alike the most important and the least attended to: namely, the principle that throughout youth, as in early childhood and in maturity, the process shall be one of self-instruction; and the obverse principle, that the mental action induced shall be throughout intrinsically grateful. If progression from

* Those who seek aid in carrying out the system of culture above described, will find in it a little work entitled "*Inventional Geometry*"; published by Messrs. Williams & Norgate.

simple to complex, from indefinite to definite, and from concrete to abstract, be considered the essential requirements as dictated by abstract psychology; then do the requirements that knowledge shall be self-mastered, and pleurably mastered, become tests by which we may judge whether the dictates of abstract psychology are being obeyed. If the first embody the leading generalisations of the *science* of mental growth, the last are the chief canons of the *art* of fostering mental growth. For manifestly, if the steps in our *curriculum* are so arranged that they can be successively ascended by the pupil himself with little or no help, they must correspond with the stages of evolution in his faculties; and manifestly, if the successive achievements of these steps are intrinsically gratifying to him, it follows that they require no more than a normal exercise of his powers.

But making education a process of self-evolution, has other advantages than this of keeping our lessons in the right order. In the first place, it guarantees a vividness and permanency of impression which the usual methods can never produce. Any piece of knowledge which the pupil has himself acquired — any problem which he has himself solved, becomes, by virtue of the conquest, much more thoroughly his than it could else be. The preliminary activity of mind which his success implies, the concentration of thought necessary to it, and the excitement consequent on his triumph, conspire to register the facts in his memory in a way that no mere information heard from a teacher, or read in a school-book, can be registered. Even if he fails, the tension to which his faculties have been wound up, insures his remembrance of the solution when given to him, better than half-a-dozen repetitions would. Observe, again, that this disci-

pline necessitates a continuous organisation of the knowledge he acquires. It is in the very nature of facts and inferences assimilated in this normal manner, that they successively become the premises of further conclusions—the means of solving further questions. The solution of yesterday's problem helps the pupil in mastering to-day's. Thus the knowledge is turned into faculty as soon as it is taken in, and forthwith aids in the general function of thinking—does not lie merely written on the pages of an internal library, as when rote-learned. Mark further, the moral culture which this constant self-help involves. Courage in attacking difficulties, patient concentration of the attention, perseverance through failures—these are characteristics which after-life specially requires; and these are characteristics which this system of making the mind work for its food specially produces. That it is thoroughly practicable to carry out instruction after this fashion, we can ourselves testify; having been in youth thus led to solve the comparatively complex problems of perspective. And that leading teachers have been tending in this direction, is indicated alike in the saying of Fellenberg, that “the individual, independent activity of the pupil is of much greater importance than the ordinary busy officiousness of many who assume the office of educators”; in the opinion of Horace Mann, that “unfortunately education amongst us at present consists too much in *telling*, not in *training*”; and in the remark of M. Marcel, that “what the learner discovers by mental exertion is better known than what is told to him.”

Similarly with the correlative requirement, that the method of culture pursued shall be one productive of an intrinsically happy activity,—an activity not happy
cause of intrinsic

but because of its own healthfulness. Conformity to this requirement, besides preventing us from thwarting the normal process of evolution, incidentally secures positive benefits of importance. Unless we are to return to an ascetic morality (or rather *im*-morality) the maintenance of youthful happiness must be considered as in itself a worthy aim. Not to dwell upon this, however, we go on to remark that a pleasurable state of feeling is far more favourable to intellectual action than a state of indifference or disgust. Every one knows that things read, heard, or seen with interest, are better remembered than things read, heard, or seen with apathy. In the one case the faculties appealed to are actively occupied with the subject presented; in the other they are inactively occupied with it, and the attention is continually drawn away by more attractive thoughts. Hence the impressions are respectively strong and weak. Moreover, to the intellectual listlessness which a pupil's lack of interest in any study involves, must be added the paralysing fear of consequences. This, by distracting his attention, increases the difficulty he finds in bringing his faculties to bear upon facts that are repugnant to them. Clearly, therefore, the efficiency of tuition will, other things equal, be proportionate to the gratification with which tasks are performed.

It should be considered also, that grave moral consequences depend upon the habitual pleasure or pain which daily lessons produce. No one can compare the faces and manners of two boys—the one made happy by mastering interesting subjects, and the other made miserable by disgust with his studies, by consequent inability, by cold looks, by threats, by punishment—without seeing that the disposition of the one is being benefited, and that of the other injured. Whoever

has marked the effects of success and failure upon the mind, and the power of the mind over the body; will see that in the one case both temper and health are favourably affected, while in the other there is danger of permanent moroseness, of permanent timidity, and even of permanent constitutional depression. There remains yet another indirect result of no small moment. The relationship between teachers and their pupils is, other things equal, rendered friendly and influential, or antagonistic and powerless, according as the system of culture produces happiness or misery. Human beings are at the mercy of their associated ideas. A daily minister of pain cannot fail to be regarded with secret dislike; and if he causes no emotions but painful ones, will inevitably be hated. Conversely, he who constantly aids children to their ends, hourly provides them with the satisfactions of conquest, hourly encourages them through their difficulties and sympathises in their successes, will be liked; nay, if his behaviour is consistent throughout, must be loved. And when we remember how efficient and benign is the control of a master who is felt to be a friend, when compared with the control of one who is looked upon with aversion, or at best indifference, we may infer that the indirect advantages of conducting education on the happiness-principle do not fall far short of the direct ones. To all who question the possibility of acting out the system here advocated, we reply as before, that not only does theory point to it, but experience commends it. To the many verdicts of distinguished teachers who since Pestalozzi's time have testified this, may be here added that of Professor Pillans, who asserts that "where young people are taught as they ought to be, they are quite as happy in school as at play,

seldom less delighted, nay, often more, with the well-directed exercise of their mental energies, than with that of their muscular powers."

As suggesting a final reason for making education a process of self-instruction, and by consequence a process of pleasurable instruction, we may advert to the fact that, in proportion as it is made so, is there a probability that it will not cease when school-days end. As long as the acquisition of knowledge is rendered habitually repugnant, so long will there be a prevailing tendency to discontinue it when free from the coercion of parents and masters. And when the acquisition of knowledge has been rendered habitually gratifying, then there will be as prevailing a tendency to continue, without superintendence, that self-culture previously carried on under superintendence. These results are inevitable. While the laws of mental association remain true—while men dislike the things and places that suggest painful recollections, and delight in those which call to mind by-gone pleasures—painful lessons will make knowledge repulsive, and pleasurable lessons will make it attractive. The men to whom in boyhood information came in dreary tasks along with threats of punishment, and who were never led into habits of independent inquiry, are unlikely to be students in after years; while those to whom it came in the natural forms, at the proper times, and who remember its facts as not only interesting in themselves, but as the occasions of a long series of gratifying successes, are likely to continue through life that self-instruction commenced in youth.

CHAPTER III.

MORAL EDUCATION

THE greatest defect in our programmes of education is entirely overlooked. While much is being done in the detailed improvement of our systems in respect both of matter and manner, the most pressing desideratum has not yet been even recognised as a desideratum. To prepare the young for the duties of life, is tacitly admitted to be the end which parents and schoolmasters should have in view; and happily, the value of the things taught, and the goodness of the methods followed in teaching them, are now ostensibly judged by their fitness to this end. The propriety of substituting for an exclusively classical training, a training in which the modern languages shall have a share, is argued on this ground. The necessity of increasing the amount of science is urged for like reasons. But though some care is taken to fit youth of both sexes for society and citizenship, no care whatever is taken to fit them for the position of parents. While it is seen that for the purpose of gaining a livelihood, an elaborate preparation is needed, it appears to be thought that for the bringing up of children, no preparation whatever is needed. While many years are spent by a boy in gaining knowledge of which the chief value is that it constitutes "the education of a gentleman"; and while many years are spent by a girl in those decorative acquirements which fit her for evening parties; not an hour is spent by either in preparation for that gravest of all responsibilities—the management of a family. Is it that this responsibility is but a remote contingency? On the contrary, it is sure to devolve on nine

out of ten. Is it that the discharge of it is easy? Certainly not: of all functions which the adult has to fulfil, this is the most difficult. Is it that each may be trusted by self-instruction to fit himself, or herself, for the office of parent? No: not only is the need for such self-instruction unrecognised, but the complexity of the subject renders it the one of all others in which self-instruction is least likely to succeed. No rational plea can be put forward for leaving the Art of Education out of our *curriculum*. Whether as bearing on the happiness of parents themselves, or whether as affecting the characters and lives of their children and remote descendants, we must admit that a knowledge of the right methods of juvenile culture, physical, intellectual, and moral, is a knowledge of extreme importance. This topic should be the final one in the course of instruction passed through by each man and woman. As physical maturity is marked by the ability to produce offspring; so, mental maturity is marked by the ability to train those offspring. *The subject which involves all other subjects, and therefore the subject in which education should culminate, is the Theory and Practice of Education.*

In the absence of this preparation, the management of children, and more especially the moral management, is lamentably bad. Parents either never think about the matter at all, or else their conclusions are crude and inconsistent. In most cases, and especially on the part of mothers, the treatment adopted on every occasion is that which the impulse of the moment prompts: it springs not from any reasoned-out conviction as to what will most benefit the child, but merely expresses the dominant parental feelings, whether good or ill; and varies from hour to hour as these feelings vary. Or

if the dictates of passion are supplemented by any definite doctrines and methods, they are those handed down from the past, or those suggested by the remembrances of childhood, or those adopted from nurses and servants—methods devised not by the enlightenment, but by the ignorance, of the time. Commenting on the chaotic state of opinion and practice relative to self-government, Richter writes:—

If the secret variances of a large class of ordinary fathers were brought to light, and laid down as a plan of studies and reading, catalogued for a moral education, they would run somewhat after this fashion:—In the first hour “pure morality must be read to the child, either by myself or the tutor”; in the second “mixed morality, or that which may be applied to one's own advantage”; in the third, “do you not see that your father does so and so?”; in the fourth, “you are little, and this is only fit for grown-up people”; in the fifth, “the chief matter is that you should succeed in the world, and become something in the state”; in the sixth, “not the temporary, but the eternal, determines the worth of a man”; in the seventh, “therefore rather suffer injustice, and be kind”; in the eighth, “but defend yourself bravely if any one attack you”; in the ninth, “do not make a noise, dear child”; in the tenth, “a boy must not sit so quiet”; in the eleventh, “you must obey your parents better”; in the twelfth, “and educate yourself.” So by the hourly change of his principles, the father conceals their untenableness and oneness. As for his wife, she is neither like him, nor yet like that harlequin who came on to the stage with a bundle of papers under each arm, and answered to the inquiry, what he had under his right arm, “orders,” and to what he had under his left arm, “counter-orders.” But the mother might be much better compared to a giant Briareus, who had a hundred arms, and a bundle of papers under each.

This state of things is not to be readily changed. Generations must pass before a great amelioration of it can be expected. Like political institutions, educational systems are not made, but grow; and within brief periods growth is insensible. Slow, however, as must be any improve-

ment, even that improvement implies the use of means ; and among the means is discussion.

We are not among those who believe in Lord Palmerston's dogma, that "all children are born good." On the whole, the opposite dogma, untenable as it is, seems to us less wide of the truth. Nor do we agree with those who think that, by skilful discipline, children may be made altogether what they should be. Contrariwise, we are satisfied that, though imperfections of nature may be diminished by wise management, they cannot be removed by it. The notion that an ideal humanity might be forthwith produced by a perfect system of education, is near akin to that implied in the poems of Shelley, that would mankind give up their old institutions and prejudices, all the evils in the world would at once disappear : neither notion being acceptable to such as have dispassionately studied human affairs.

Nevertheless, we may fitly sympathise with those who entertain these too sanguine hopes. Enthusiasm, pushed even to fanaticism, is a useful motive-power—perhaps an indispensable one. It is clear that the ardent politician would never undergo the labours and make the sacrifices he does, did he not believe that the reform he fights for is the one thing needful. But for his conviction that drunkenness is the root of all social evils, the teetotaler would agitate far less energetically. In philanthropy, as in other things, great advantage results from division of labour ; and that there may be division of labour, each class of philanthropists must be more or less subordinated to its function—must have an exaggerated faith in its work. Hence, of those who regard

panacea, we may say that their undue expectations are not without use ; and that perhaps it is part of the beneficent order of things that their confidence cannot be shaken.

Even were it true, however, that by some possible system of moral control, children could be moulded into the desired form, and even could every parent be indoctrinated with this system ; we should still be far from achieving the object in view. It is forgotten that the carrying out of any such system presupposes, on the part of adults, a degree of intelligence, of goodness, of self-control, possessed by no one. The error made by those who discuss questions of domestic discipline, lies in ascribing all the faults and difficulties to the children, and none to the parents. The current assumption respecting family government, as respecting national government, is, that the virtues are with the rulers and the vices with the ruled. Judging by educational theories, men and women are entirely transfigured in their relations to offspring. The citizens we do business with, the people we meet in the world, we know to be very imperfect creatures. In the daily scandals, in the quarrels of friends, in bankruptcy disclosures, in lawsuits, in police reports, we have constantly thrust before us the pervading selfishness, dishonesty, brutality. Yet when we criticise nursery-management and canvass the misbehaviour of juvenils, we habitually take for granted that these culpable persons are free from moral delinquency in the treatment of their boys and girls ! So far is this from the truth, that we do not hesitate to blame parental misconduct for a great part of the domestic disorder commonly ascribed to the perversity of children. We do not assert,

restrained, among whom we hope most of our readers may be classed; but we assert it of the mass. What kind of moral culture is to be expected from a mother who, time after time, angrily shakes her infant because it will not suck; which we once saw a mother do? How much sense of justice is likely to be instilled by a father who, on having his attention drawn by a scream to the fact that his child's finger is jammed between the window-sash and the sill, begins to beat the child instead of releasing it? Yet that there are such fathers is testified to us by an eye-witness. Or, to take a still stronger case, also vouched for by direct testimony—what are the educational prospects of the boy who, on being taken home with a dislocated thigh, is saluted with a castigation? It is true that these are extreme instances—instances exhibiting in human beings that blind instinct which impels brutes to destroy the weakly and injured of their own race. But extreme though they are, they typify feelings and conduct daily observable in many families. Who has not repeatedly seen a child slapped by nurse or parent for a fretfulness probably resulting from bodily derangement? Who, when watching a mother snatch up a fallen little one, has not often traced, both in the rough manner and in the sharply-uttered exclamation—"You stupid little thing!"—an irascibility foretelling endless future squabbles? Is there not in the harsh tones in which a father bids his children be quiet, evidence of a deficient fellow-feeling with them? Are not the constant, and often quite needless, thwartings that the young experience—the injunctions to sit still, which an active child cannot obey without suffering great nervous irritation, the commands not to look out of the window

when travelling by railway, which on a child of any intelligence entails serious deprivation—are not these thwartings, we ask, signs of a terrible lack of sympathy? The truth is, that the difficulties of moral education are necessarily of dual origin—necessarily result from the combined faults of parents and children. If hereditary transmission is a law of nature, as every naturalist knows it to be, and as our daily remarks and current proverbs admit it to be; then, on the average of cases, the defects of children mirror the defects of their parents;—on the average of cases, we say, because, complicated as the results are by the transmitted traits of remoter ancestors, the correspondence is not special but only general. And if, on the average of cases, this inheritance of defects exists, then the evil passions which parents have to check in their children, imply like evil passions in themselves: hidden, it may be, from the public eye; or perhaps obscured by other feelings; but still there. Evidently, therefore, the general practice of any ideal system of discipline is hopeless: parents are not good enough.

Moreover, even were there methods by which the desired end could be at once effected; and even had fathers and mothers sufficient insight, sympathy, and self-command to employ these methods consistently; it might still be contended that it would be of no use to reform family-government faster than other things are reformed. What is it that we aim to do? Is it not that education of whatever kind, has for its proximate end to prepare a child for the business of life—to produce a citizen who, while he is well conducted, is also able to make his way in the world? And does not making his way in the world (by which we mean, not the acquirement of wealth,

but of the funds requisite for bringing up a family)—does not this imply a certain fitness for the world as it now is? And if by any system of culture an ideal human being could be produced, is it not doubtful whether he would be fit for the world as it now is? May we not, on the contrary, suspect that his too keen sense of rectitude, and too elevated standard of conduct, would make life intolerable or even impossible? And however admirable the result might be, considered individually, would it not be self-defeating in so far as society and posterity are concerned? There is much reason for thinking that as in a nation so in a family, the kind of government is, on the whole, about as good as the general state of human nature permits it to be. We may argue that in the one case, as in the other, the average character of the people determines the quality of the control exercised. In both cases it may be inferred that amelioration of the average character leads to an amelioration of system; and further, that were it possible to ameliorate the system without the average character being first ameliorated, evil rather than good would follow. Such degree of harshness as children now experience from their parents and teachers, may be regarded as but a preparation for that greater harshness which they will meet with on entering the world. And it may be urged that were it possible for parents and teachers to treat them with perfect equity and entire sympathy, it would but intensify the sufferings which the selfishness of men must, in after life, inflict on them.¹

"But does not this prove too much?" some one will ask. "If no system of moral training can forthwith make children what they should be; if, even were there a system that would do this, existing parents are too imperfect to carry it out; and if even could such a system be successfully carried out, its results would be disastrously incongruous with the present state of society; does it not follow that to reform the system now in use, is neither practicable nor desirable?" No. It merely follows that reform in domestic government must go on, *pari passu*, with other reforms. It merely follows that methods of discipline neither can be nor should be ameliorated, except by instalments. It merely follows that the dictates of abstract rectitude will, in practice, inevitably be subordinated by the present state of human nature—by the imperfections alike of children, of parents, and of society; and can only be better fulfilled as the general character becomes better.

"At any rate, then," may rejoin our critic, "it is clearly useless to set up any ideal standard of family discipline. There can be no advantage in elaborating and recommending methods that are in advance of the time." Again we

must be admitted that the plea has some force; but it is a very insufficient plea. For whereas domestic and school discipline, though they should not be much better than the discipline of adult life, should be somewhat better; the discipline which boys meet with at Eton, Winchester, Harrow, etc., is worse than that adult life—more unjust and cruel. Instead of being an aid to human progress which all culture should be, the culture of our public schools, by accustoming boys to a despotic form of government and an intercourse regulated by brute force, tends to fit them for a lower state of society than that which exists.* And chiefly recruited as our legislature is from among those who are brought up at such schools, this barbarising influence becomes a hindrance to national progress.

¹ Of this nature is the plea put in by some for the rough treatment experienced by boys at our public schools; where, as it is said, they are introduced to a miniature world whose hardships prepare them for those of the real world. It

contend for the contrary. Just as in the case of political government, though pure rectitude may be at present impracticable, it is requisite to know where the right lies, in order that the changes we make may be *towards* the right instead of *away* from it; so, in the case of domestic government, an ideal must be upheld, that there may be gradual approximations to it. We need fear no evil consequences from the maintenance of such an ideal. On the average the constitutional conservatism of mankind is strong enough to prevent too rapid a change. Things are so organised that until men have grown up to the level of a higher belief, they cannot receive it: nominally, they may hold it, but not virtually. And even when the truth gets recognised, the obstacles to conformity with it are so persistent as to outlive the patience of philanthropists and even of philosophers. We may be sure, therefore, that the difficulties in the way of a normal government of children, will always put an adequate check upon the efforts to realise it.

With these preliminary explanations, let us go on to consider the true aims and methods of moral education. After a few pages devoted to the settlement of general principles, during the perusal of which we bespeak the reader's patience, we shall aim by illustrations to make clear the right methods of parental behaviour in the hourly occurring difficulties of family government.

When a child falls, or runs its head against the table, it suffers a pain, the remembrance of which tends to make it more careful; and by repetition of such experiences, it is eventually disciplined into proper guidance of its movements. If it lays hold of the fire-bars, thrusts its

hand into a candle-flame, or spills boiling water on any part of its skin, the resulting burn or scald is a lesson not easily forgotten. So deep an impression is produced by one or two events of this kind, that no persuasion will afterwards induce it thus to disregard the laws of its constitution.

Now in these cases, Nature illustrates to us in the simplest way, the true theory and practice of moral discipline—a theory and practice which, however much they may seem to the superficial like those commonly received, we shall find on examination to differ from them very widely.

Observe, first, that in bodily injuries and their penalties we have misconduct and its consequences reduced to their simplest forms. Though, according to their popular acceptations, *right* and *wrong* are words scarcely applicable to actions that have none but direct bodily effects; yet whoever considers the matter will see that such actions must be as much classifiable under these heads as any other actions. From whatever assumption they start, all theories of morality agree that conduct whose total results, immediate and remote, are beneficial, is good conduct; while conduct whose total results, immediate and remote, are injurious, is bad conduct. The *ultimate* standards by which all men judge of behaviour, are the resulting happiness or misery. We consider drunkenness wrong because of the physical degeneracy and accompanying moral evils entailed on the drunkard and his dependents. Did theft give pleasure both to taker and loser, we should not find it in our catalogue of sins. Were it conceivable that kind actions multiplied human sufferings, we should condemn them—should not consider them kind. It needs but to

read the first newspaper-leader, or listen to any conversation on social affairs, to see that acts of parliament, political movements, philanthropic agitations, in common with the doings of individuals are judged by their anticipated results in augmenting the pleasures or pains of men. And if on analysing all secondary, superinduced ideas, we find these to be our final tests of right and wrong, we cannot refuse to class bodily conduct as right or wrong according to the beneficial or detrimental results produced.

Note, in the second place, the character of the punishments by which these physical transgressions are prevented. Punishments, we call them, in the absence of a better word: for they are not punishments in the literal sense. They are not artificial and unnecessary inflictions of pain; but are simply the beneficent checks to actions that are essentially at variance with bodily welfare—checks in the absence of which life would be quickly destroyed by bodily injuries. It is the peculiarity of these penalties, if we must so call them, that they are simply the *unavoidable consequences* of the deeds which they follow: they are nothing more than the *inevitable reactions* entailed by the child's actions.

Let it be further borne in mind that these painful reactions are proportionate to the transgressions. A slight accident brings a slight pain; a more serious one, a severer pain. It is not ordained that the urchin who tumbles over the doorstep, shall suffer in excess of the amount necessary; with the view of making it still more cautious than the necessary suffering will make it. But from its daily experience it is left to learn the greater or less errors; and to behave accordingly.

And then mark, lastly, that these natural reactions which follow the child's

wrong actions, are constant, direct, unhesitating, and not to be escaped. No threats; but a silent, rigorous performance. If a child runs a pin into its finger, pain follows. If it does it again, there is again the same result: and so on perpetually. In all its dealings with inorganic Nature it finds this unswerving persistence, which listens to no excuse, and from which there is no appeal; and very soon recognising this stern though beneficent discipline, it becomes extremely careful not to transgress.

Still more significant will these general truths appear, when we remember that they hold throughout adult life as well as throughout infantine life. It is by an experimentally-gained knowledge of the natural consequences, that men and women are checked when they go wrong. After home education has ceased, and when there are no longer parents and teachers to forbid this or that kind of conduct, there comes into play a discipline like that by which the young child is trained to self-guidance. If the youth entering on the business of life idles away his time and fulfils slowly or unskillfully the duties entrusted to him, there by-and-by follows the natural penalty: he is discharged, and left to suffer for awhile the evils of a relative poverty. On the unpunctual man, ever missing his appointments of business and pleasure, there continually fall the consequent inconveniences, losses, and deprivations. The tradesman who charges too high a rate of profit, loses his customers, and so is checked in his greediness. Diminishing practice teaches the inattentive doctor to bestow more trouble on his patients. The too credulous creditor and the over-sanguine speculator, alike learn by the difficulties which rashness entails on them, the necessity of being

more cautious in their engagements. And so throughout the life of every citizen. In the quotation so often made *apropos* of such cases—"The burnt child dreads the fire"—we see not only that the analogy between this social discipline and Nature's early discipline of infants is universally recognised; but we also see an implied conviction that this discipline is of the most efficient kind. Nay indeed, this conviction is more than implied; it is distinctly stated. Every one has heard others confess that only by "dearly bought experience" had they been induced to give up some bad or foolish course of conduct formerly pursued. Every one has heard, in the criticisms passed on the doings of this spendthrift or the other schemer, the remark that advice was useless, and that nothing but "bitter experience" would produce any effect: nothing, that is, but suffering the unavoidable consequences. And if further proof be needed that the natural reaction is not only the most efficient penalty, but that no humanly-devised penalty can replace it, we have such further proof in the notorious ill-success of our various penal systems. Out of the many methods of criminal discipline that have been proposed and legally enforced, none have answered the expectations of their advocates. Artificial punishments have failed to produce reformation; and have in many cases increased the criminality. The only successful reformatories are those privately-established ones which approximate their *régime* to the method of Nature—which do little more than administer the natural consequences of criminal conduct: diminishing the criminal's liberty of action as much as is needful for the safety of society, and requiring him to maintain himself while living under this restraint. Thus we see, both that the

discipline by which the young child is taught to regulate its movements is the discipline by which the great mass of adults are kept in order, and more or less improved; and that the discipline humanly-devised for the worst adults, fails when it diverges from this divinely-ordained discipline, and begins to succeed on approximating to it.

Have we not here, then, the guiding principle of moral education? Must we not infer that the system so beneficent in its effects during infancy and maturity, will be equally beneficent throughout youth? Can any one believe that the method which answers so well in the first and the last divisions of life, will not answer in the intermediate division? Is it not manifest that as "ministers and interpreters of Nature" it is the function of parents to see that their children habitually experience the true consequences of their conduct—the natural reactions; neither warding them off, nor intensifying them, nor putting artificial consequences in place of them? No unprejudiced reader will hesitate in his assent.

Probably, however, not a few will contend that already most parents do this—that the punishments they inflict are, in the majority of cases, the true consequences of ill-conduct—that parental anger, venting itself in harsh words and deeds, is the result of a child's transgression—and that, in the suffering, physical or moral, which the child is subject to, it experiences the natural reaction of its misbehaviour. Along with much error this assertion contains some truth. It is unquestionable that the displeasure of fathers and mothers is a true consequence of juvenile delinquency; and that the manifestation of it is a normal check upon such delinquency. The scoldings,

and threats, and blows, which a passionate parent visits on offending little ones, are doubtless effects actually drawn from such a parent by their offences; and so are, in some sort, to be considered as among the natural reactions of their wrong actions. Nor are we prepared to say that these modes of treatment are not relatively right—right, that is, in relation to the uncontrollable children of ill-controlled adults; and right in relation to a state of society in which such ill-controlled adults make up the mass of the people. As already suggested, educational systems, like political and other institutions, are generally as good as the state of human nature permits. The barbarous children of barbarous parents are probably only to be restrained by the barbarous methods which such parents spontaneously employ; while submission to these barbarous methods is perhaps the best preparation such children can have for the barbarous society in which they are presently to play a part. Conversely, the civilised members of a civilised society will spontaneously manifest their displeasure in less violent ways—will spontaneously use milder measures: measures strong enough for their better-natured children. Thus it is true that, in so far as the expression of parental feeling is concerned, the principle of the natural reaction is always more or less followed. The system of domestic government gravitates towards its right form.

But now observe two important facts. The first fact is that, in states of rapid transition like ours, which witness a continuous battle between old and new theories and old and new practices, the educational methods in use are apt to be considerably out of harmony with the times. In deference to dogmas fit only for the ages that uttered them, many

parents inflict punishments that do violence to their own feelings, and so visit on their children ~~unnatural~~ natural reactions; while other parents, enthusiastic in their hopes of immediate perfection, rush to the opposite extreme. The second fact is, that the discipline of chief value is not the experience of parental approbation or disapprobation; but it is the experience of those results which would ultimately flow from the conduct in the absence of parental opinion or interference. The truly instructive and salutary consequences are not those inflicted by parents when they take upon themselves to be Nature's proxies; but they are those inflicted by Nature herself. We will endeavour to make this distinction clear by a few illustrations, which, while they show what we mean by natural reactions as contrasted with artificial ones, will afford some practical suggestions.

In every family where there are young children there daily occur cases of what mothers and servants call "making a litter." A child has had out its box of toys, and leaves them scattered about the floor. Or a handful of flowers, brought in from a morning walk, is presently seen dispersed over tables and chairs. Or, a little girl, making doll's clothes, disfigures the room with shreds. In most cases the trouble of rectifying this disorder falls anywhere but where it should. Occurring in the nursery, the nurse herself, with many grumbings about "tiresome little things," undertakes the task; if below-stairs, the task usually devolves either on one of the elder children or on the housemaid: the transgressor being visited with nothing more than a scolding. In this very simple case, however, there are many parents wise enough to follow out, more or less consistently, the normal course—

that of making the child itself collect the toys or shreds. The labour of putting things in order, is the true consequence of having put them in disorder. Every trader in his office, every wife in her household, has daily experience of this fact. And if education be a preparation for the business of life, then every child should also, from the beginning, have daily experience of this fact. If the natural penalty be met by refractory behaviour (which it may perhaps be where the system of moral discipline previously pursued has been bad), then the proper course is to let the child feel the ulterior reaction caused by its disobedience. Having refused or neglected to pick up and put away the things it has scattered about, and having thereby entailed the trouble of doing this on some one else, the child should, on subsequent occasions, be denied the means of giving this trouble. When next it petitions for its toy-box, the reply of its mamma should be—"The last time you had your toys you left them lying on the floor, and Jane had to pick them up. Jane is too busy to pick up every day the things you leave about ; and I cannot do it myself. So that, as you will not put away your toys when you have done with them, I cannot let you have them." This is obviously a natural consequence, neither increased nor lessened ; and must be so recognised by a child. The penalty comes, too, at the moment when it is most keenly felt. A new-born desire is balked at the moment of anticipated gratification ; and the strong impression so produced can scarcely fail to have an effect on the future conduct : an effect which, by consistent repetition, will do whatever can be done in curing the fault. Add to which, that, by this method, a child is early taught the lesson which cannot

be learnt too soon, that in this world of ours pleasures are rightly to be obtained only by labour.

Take another case. Not long since we had frequently to hear the reprimands visited on a little girl who was scarcely ever ready in time for the daily walk. Of eager disposition, and apt to become absorbed in the occupation of the moment, Constance never thought of putting on her things till the rest were ready. The governess and the other children had almost invariably to wait ; and from the mamma there almost invariably came the same scolding. Utterly as this system failed, it never occurred to the mamma to let Constance experience the natural penalty. Nor, indeed, would she try it when it was suggested to her. In the world, unreadiness entails the loss of some advantage that would else have been gained : the train is gone ; or the steam-boat is just leaving its moorings ; or the best things in the market are sold ; or all the good seats in the concert-room are filled. And every one, in cases perpetually occurring, may see that it is the prospective deprivations which prevent people from being too late. Is not the inference obvious ? Should not the prospective deprivations control a child's conduct also ? If Constance is not ready at the appointed time, the natural result is that of being left behind, and losing her walk. And after having once or twice remained at home while the rest were enjoying themselves in the fields—after having felt that this loss of a much-prized gratification was solely due to want of promptitude ; amendment would in all probability take place. At any rate, the measure would be more effective than that perpetual scolding which ends only in producing callousness.

Again, when children, with more than

usual carelessness, break or lose the things given to them, the natural penalty—the penalty which makes grown-up persons more careful—is the consequent inconvenience. The lack of the lost or damaged article, and the cost of replacing it, are the experiences by which men and women are disciplined in these matters; and the experiences of children should be as much as possible assimilated to theirs. We do not refer to that early period at which toys are pulled to pieces in the process of learning their physical properties, and at which the results of carelessness cannot be understood; but to a later period, when the meaning and advantages of property are perceived. When a boy, old enough to possess a penknife, uses it so roughly as to snap the blade, or leaves it in the grass by some hedge-side where he was cutting a stick, a thoughtless parent, or some indulgent relative, will commonly forthwith buy him another; not seeing that, by doing this, a valuable lesson is prevented. In such a case, a father may properly explain that penknives cost money, and that to get money requires labour; that he cannot afford to purchase new penknives for one who loses or breaks them; and that until he sees evidence of greater carefulness he must decline to make good the loss. A parallel discipline will serve to check extravagance.

These few familiar instances, here chosen because of the simplicity with which they illustrate our point, will make clear to every one the distinction between those natural penalties which we contend are the truly efficient ones, and those artificial penalties commonly substituted for them. Before going on to exhibit the higher and subtler applications of the principle exemplified, let us note its many and great superiorities over

practice, which prevails in most families.

One superiority is that the pursuance of it generates right conceptions of cause and effect; which by frequent and consistent experience are eventually rendered definite and complete. Proper conduct in life is much better guaranteed when the good and evil consequences of actions are understood, than when they are merely believed on authority. A child who finds that disorderliness entails the trouble of putting things in order, or who misses a gratification from dilatoriness, or whose carelessness is followed by the want of some much-prized possession, not only suffers a keenly-felt consequence, but gains a knowledge of causation: both the one and the other being just like those which adult life will bring. Whereas a child who in such cases receives a reprimand, or some factitious penalty, not only experiences a consequence for which it often cares very little, but misses that instruction respecting the essential natures of good and evil conduct, which it would else have gathered. It is a vice of the common system of artificial rewards and punishments, long since noticed by the clear-sighted, that by substituting for the natural results of misbehaviour certain tasks or castigations, it produces a radically wrong moral standard. Having throughout infancy and boyhood always regarded parental or tutorial displeasure as the chief result of a forbidden action, the youth has gained an established association of ideas between such action and such displeasure, as cause and effect. Hence when parents and tutors have abdicated, and their displeasure is not to be feared,* the restraints on forbidden actions are in great measure removed: the true restraints, the natural reactions, having yet to be learnt by sad experience.

knowledge of this short-sighted system :—
 “Young men let loose from school, particularly those whose parents have neglected to exert their influence, plunge into every description of extravagance ; they know no rule of action—they are ignorant of the reasons for moral conduct—they have no foundation to rest upon—and until they have been severely disciplined by the world are extremely dangerous members of society.”

Another great advantage of this natural discipline is, that it is a discipline of pure justice ; and will be recognised as such by every child. Whoso suffers nothing more than the evil which in the order of nature results from his own misbehaviour, is much less likely to think himself wrongly treated than if he suffers an artificially inflicted evil ; and this will hold of children as of men. Take the case of a boy who is habitually reckless of his clothes—scrambles through hedges without caution, or is utterly regardless of mud. If he is beaten, or sent to bed, he is apt to consider himself ill-used ; and is more likely to brood over his injuries than to repent of his transgressions. But suppose he is required to rectify as far as possible the harm he has done—to clean off the mud with which he has covered himself, or to mend the tear as well as he can. Will he not feel that the evil is one of his own producing ? Will he not while paying this penalty be continuously conscious of the connection between it and its cause ? And will he not, spite of his irritation, recognise more or less clearly the justice of the arrangement ? If several lessons of this kind fail to produce amendment—if suits of clothes are prematurely spoiled—if the father, pursuing this same system of discipline, declines to spend money for new ones until the ordinary time has

elapsed—and if meanwhile, there occur occasions on which, having no decent clothes to go in, the boy is debarred from joining the rest of the family on holiday excursions and *fiat* days, it is manifest that while he will keenly feel the punishment, he can scarcely fail to trace the chain of causation, and to perceive that his own carelessness is the origin of it. And seeing this he will not have any such sense of injustice as if there were no obvious connection between the transgression and its penalty.

Again, the tempers both of parents and children are much less liable to be ruffled under this system than under the ordinary system. When, instead of letting children experience the painful results which naturally follow from wrong conduct, parents themselves inflict certain other painful results, they produce double mischief. Making, as they do, multiplied family laws ; and identifying their own supremacy and dignity with the maintenance of these laws ; every transgression is regarded as an offence against themselves, and a cause of anger on their part. And then come the further vexations which result from taking upon themselves, in the shape of extra labour or cost, those evil consequences which should have been allowed to fall on the wrong-doers. Similarly with the children. Penalties which the necessary reaction of things brings round upon them—penalties which are inflicted by impersonal agency, produce an irritation that is comparatively slight and transient ; whereas penalties voluntarily inflicted by a parent, and afterwards thought of as caused by him or her, produce an irritation both greater and more continued. Just consider how disastrous would be the result if this empirical method were pursued from the beginning. Suppose

it were possible for parents to take upon themselves the physical sufferings entailed on their children by ignorance and awkwardness; and that while bearing these evil consequences they visited on their children certain other evil consequences, with the view of teaching them the impropriety of their conduct. Suppose that when a child, who had been forbidden to meddle with the kettle, spilt boiling water on its foot, the mother vicariously assumed the scald and gave a blow in place of it; and similarly in all other cases. Would not the daily mishaps be sources of far more anger than now? Would there not be chronic ill-temper on both sides? Yet an exactly parallel policy is pursued in after-years. A father who beats his boy for carelessly or wilfully breaking a sister's toy, and then himself pays for a new toy, does substantially the same thing—inflicts an artificial penalty on the transgressor, and takes the natural penalty on himself: his own feelings and those of the transgressor being alike needlessly irritated. Did he simply require restitution to be made, he would produce far less heart-burning. If he told the boy that a new toy must be bought at his, the boy's cost; and that his supply of pocket-money must be withheld to the needful extent; there would be much less disturbance of temper on either side: while in the deprivation afterwards felt, the boy would experience the equitable and salutary consequence. In brief, the system of discipline by natural reactions is less injurious to temper, both because it is perceived to be nothing more than pure justice, and because it in great part substitutes the impersonal agency of Nature for the personal agency of parents.

Whence also follows the manifest corollary, that under this system the parental

and filial relation, being a more friendly, will be a more influential one. Whether in parent or child, anger, however caused, and to whomsoever directed, is detrimental. But anger in a parent towards a child, and in a child towards a parent, is especially detrimental; because it weakens that bond of sympathy which is essential to beneficent control. From the law of association of ideas, it inevitably results, both in young and old, that dislike is contracted towards things which in experience are habitually connected with disagreeable feelings. Or where attachment originally existed, it is diminished, or turned into repugnance, according to the quantity of painful impressions received. Parental wrath, venting itself in reprimands and castigations, cannot fail, if often repeated, to produce filial alienation; while the resentment and sulkiness of children cannot fail to weaken the affection felt for them, and may even end in destroying it. Hence the numerous cases in which parents (and especially fathers, who are commonly deputed to inflict the punishment) are regarded with indifference, if not with aversion; and hence the equally numerous cases in which children are looked upon as inflictions. Seeing then, as all must do, that estrangement of this kind is fatal to a salutary moral culture, it follows that parents cannot be too solicitous in avoiding occasions of direct antagonism with their children. And therefore they cannot too anxiously avail themselves of this discipline of natural consequences; which, by relieving them from penal functions, prevents mutual exasperations and estrangements.

The method of moral culture by experience of the normal reactions, which is the divinely-ordained method alike for infancy and for adult life, we thus

find to be equally applicable during the intermediate childhood and youth. Among the advantages of this method we see:—First; that it gives that rational knowledge of right and wrong conduct which results from personal experience of their good and bad consequences. Second; that the child, suffering nothing more than the painful effects of its own wrong actions, must recognise more or less clearly the justice of the penalties. Third; that recognising the justice of the penalties, and receiving them through the working of things rather than at the hands of an individual, its temper is less disturbed; while the parent, fulfilling the comparatively passive duty of letting the natural penalties be felt, preserves a comparative equanimity. Fourth; that mutual exasperations being thus prevented, a much happier, and a more influential relation, will exist between parent and child.

“But what is to be done in cases of more serious misconduct?” some will ask. “How is this plan to be carried out when a petty theft has been committed? or when a lie has been told? or when some younger brother or sister has been ill-used?”

Before replying to these questions, let us consider the bearings of a few illustrative facts.

Living in the family of his brother-in-law, a friend of ours had undertaken the education of his little nephew and niece. This he had conducted, more perhaps from natural sympathy than from reasoned-out conclusions, in the spirit of the method above set forth. The two children were in-doors his pupils and out-of-doors his companions. They daily joined him in walks and botanising excursions, eagerly sought plants for

identified them, and in this and other ways were ever gaining pleasure and instruction in his society. In short, morally considered, he stood to them much more in the position of parent than either their father or mother did. Describing to us the results of this policy, he gave, among other instances, the following. One evening, having need for some article lying in another part of the house, he asked his nephew to fetch it. Interested as the boy was in some amusement of the moment, he, contrary to his wont, either exhibited great reluctance or refused, we forget which. His uncle, disapproving of a coercive course, went himself for that which he wanted: merely exhibiting by his manner the annoyance this ill behaviour gave him. And when, later in the evening, the boy made overtures for the usual play, they were gravely repelled—the uncle manifested just that coldness naturally produced in him; and so let the boy feel the necessary consequences of his conduct. Next morning at the usual time for rising, our friend heard a new voice at the door, and in walked his little nephew with the hot water. Peering about the room to see what else could be done, the boy then exclaimed, “Oh! you want your boots”; and forthwith rushed down-stairs to fetch them. In this and other ways he showed a true penitence for his misconduct. He endeavoured by unusual services to make up for the service he had refused. His better feelings had made a real conquest over his lower ones; and acquired strength by the victory. And having felt what it was to be without it, he valued more than before the friendship he thus regained.

This gentleman is now himself a father; acts on the same system; and finds it

thoroughly his children's friend. The evening is longed for by them because he will be at home; and they especially enjoy Sunday because he is with them all day. Thus possessing their perfect confidence and affection, he finds that the simple display of his approbation or disapprobation gives him abundant power of control. If, on his return home, he hears that one of his boys has been naughty, he behaves towards him with that coolness which the consciousness of the boy's misconduct naturally produces; and he finds this a most efficient punishment. The mere withholding of the usual caresses, is a source of much distress—produces a more prolonged fit of crying than a beating would do. And the dread of this purely moral penalty is, he says, ever present during his absence: so much so, that frequently during the day his children ask their mamma how they have behaved, and whether the report will be good. Recently the eldest, an active urchin of five, in one of those bursts of animal spirits common in healthy children, committed sundry extravagances during his mamma's absence—cut off part of his brother's hair and wounded himself with a razor taken from his father's dressing-case. Hearing of these occurrences on his return, the father did not speak to the boy either that night or next morning. Besides the immediate tribulation the effect was, that when, a few days after, the mamma was about to go out, she was entreated by the boy not to do so; and on inquiry, it appeared his fear was that he might again transgress in her absence.

We have introduced these facts before replying to the question—"What is to be done with the graver offences?" for the purpose of first exhibiting the relation that may and ought to be estab-

lished between parents and children; for on the existence of this relation depends the successful treatment of these graver offences. And as a further preliminary, we must now point out that the establishment of this relation will result from adopting the system here advocated. Already we have shown that by simply letting a child experience the painful reactions of its own wrong actions, a parent avoids antagonism and escapes being regarded as an enemy; but it remains to be shown that where this course has been consistently pursued from the beginning, a feeling of active friendship will be generated.

At present, mothers and fathers are mostly considered by their offspring as friend-enemies. Determined as the impressions of children inevitably are by the treatment they receive; and oscillating as that treatment does between bribery and thwarting, between petting and scolding, between gentleness and castigation; they necessarily acquire conflicting beliefs respecting the parental character. A mother commonly thinks it sufficient to tell her little boy that she is his best friend; and assuming that he ought to believe her, concludes that he will do so. "It is all for your good"; "I know what is proper for you better than you do yourself"; "You are not old enough to understand it now, but when you grow up you will thank me for doing what I do";—these, and like assertions, are daily reiterated. Meanwhile the boy is daily suffering positive penalties; and is hourly forbidden to do this, that, and the other, which he wishes to do. By words he hears that his happiness is the end in view; but from the accompanying deeds he habitually receives more or less pain. Incompetent as he is to understand that future which his mother has in view, or how

this treatment conduces to the happiness of that future, he judges by the results he feels; and finding such results anything but pleasurable, he becomes sceptical respecting her professions of friendship. And is it not folly to expect any other issue? Must not the child reason from the evidence he has got? and does not this evidence seem to warrant his conclusion? The mother would reason in just the same way if similarly placed. If, among her acquaintance, she found some one who was constantly thwarting her wishes, uttering sharp reprimands, and occasionally inflicting actual penalties on her, she would pay small attention to any professions of anxiety for her welfare which accompanied these acts. Why, then, does she suppose that her boy will do otherwise?

But now observe how different will be the results if the system we contend for be consistently pursued—if the mother not only avoids becoming the instrument of punishment, but plays the part of a friend, by warning her boy of the punishment which Nature will inflict. Take a case; and that it may illustrate the mode in which this policy is to be early initiated, let it be one of the simplest cases. Suppose that, prompted by the experimental spirit so conspicuous in children, whose proceedings instinctively conform to the inductive method of inquiry—suppose that so prompted, the boy is amusing himself by lighting pieces of paper in the candle and watching them burn. A mother of the ordinary unreflective stamp, will either, on the plea of keeping him “out of mischief,” or from fear that he will burn himself, command him to desist; and in case of non-compliance will snatch the paper from him. But should he be fortunate enough to have a mother of some rationality, who knows that this interest

with which he is watching the paper burn, results from a healthy inquisitiveness, and who has also the wisdom to consider the results of interference, she will reason thus:—“If I put a stop to this I shall prevent the acquirement of a certain amount of knowledge. It is true that I may save the child from a burn; but what then? He is sure to burn himself some time; and it is quite essential to his safety in life that he should learn by experience the properties of flame. If I forbid him from running this present risk, he will certainly hereafter run the same or a greater risk when no one is present to prevent him; whereas, should he have an accident now that I am by, I can save him from any great injury. Moreover, were I to make him desist, I should thwart him in the pursuit of what is in itself a purely harmless, and indeed, instructive gratification; and he would regard me with more or less ill-feeling. Ignorant as he is of the pain from which I would save him, and feeling only the pain of a baulked desire, he could not fail to look on me as the cause of that pain. To save him from a hurt which he cannot conceive, and which has therefore no existence for him, I hurt him in a way which he feels keenly enough; and so become, from his point of view, a minister of evil. My best course, then, is simply to warn him of the danger, and to be ready to prevent any serious damage.” And following out this conclusion, she says to the child —“I fear you will hurt yourself if you do that.” Suppose, now, that the boy, persevering as he will probably do, ends by burning his hand. What are the results? In the first place he has gained an experience which he must gain eventually, and which, for his own safety, he cannot gain too soon. And in the second place, he has found that his

mother's disapproval or warning was meant for his welfare: he has a further positive experience of her benevolence—a further reason for placing confidence in her judgment and kindness—a further reason for loving her.

Of course, in those occasional hazards where there is a risk of broken limbs or other serious injury, forcible prevention is called for. But leaving out extreme cases, the system pursued should be, not that of guarding a child from the small risks which it daily runs, but that of advising and warning it against them. And by pursuing this course, a much stronger filial affection will be generated than commonly exists. If here, as elsewhere, the discipline of the natural reactions is allowed to come into play—if in those out-door scrambling and indoor experiments, by which children are liable to injure themselves, they are allowed to persist, subject only to dissuasion more or less earnest according to the danger, there cannot fail to arise an ever-increasing faith in the parental friendship and guidance. Not only, as before shown, does the adoption of this course enable fathers and mothers to avoid the odium which attaches to the infliction of positive punishment; but, as we here see, it enables them to avoid the odium which attaches to constant thwartings; and even to turn those incidents that commonly cause squabbles into a means of strengthening the mutual good feeling. Instead of being told in words, which deeds seem to contradict, that their parents are their best friends, children will learn this truth by a consistent daily experience; and so learning it, will acquire a degree of trust and attachment which nothing else can give.

And now, having indicated the more sympathetic relation which must result from the habitual use of this method,

let us return to the question above put—How is this method to be applied to the graver offences?

Note, in the first place, that these graver offences are likely to be both less frequent and less grave, under the *régime* we have described than under the ordinary *régime*. The ill-behaviour of many children is in itself a consequence of that chronic irritation in which they are kept by bad management. The state of isolation and antagonism produced by frequent punishment, necessarily deadens the sympathies; necessarily, therefore, opens the way to those transgressions which the sympathies check. That harsh treatment which children of the same family inflict on each other is often, in great measure, a reflex of the harsh treatment they receive from adults—partly suggested by direct example, and partly generated by the ill-temper and the tendency to vicarious retaliation, which follow chastisements and scoldings. It cannot be questioned that the greater activity of the affections and happier state of feeling, maintained in children by the discipline we have described, must prevent them from sinning against each other so gravely and so frequently. The still more reprehensible offences, as lies and petty thefts, will, by the same causes, be diminished. Domestic estrangement is a fruitful source of such transgressions. It is a law of human nature, visible enough to all who observe, that those who are debarred the higher gratifications fall back upon the lower; those who have no sympathetic pleasures seek selfish ones; and hence, conversely, the maintenance of happier relations between parents and children is calculated to diminish the number of those offences of which selfishness is the origin.

When, however, such offences are committed, as they will occasionally be

even under the best system, the discipline of consequences may still be resorted to ; and if there exists that bond of confidence and affection above described, this discipline will be efficient. For what are the natural consequences, say, of a theft ? They are of two kinds—direct and indirect. The direct consequence, as dictated by pure equity, is that of making restitution. A just ruler (and every parent should aim to be one) will demand that, when possible, a wrong act shall be undone by a right one ; and in the case of theft this implies either the restoration of the thing stolen, or, if it is consumed, the giving of an equivalent : which, in the case of a child, may be effected out of its pocket-money. The indirect and more serious consequence is the grave displeasure of parents—a consequence which inevitably follows among all peoples civilised enough to regard theft as a crime. “But,” it will be said, “the manifestation of parental displeasure, either in words or blows, is the ordinary course in these cases: the method leads here to nothing new.” Very true. Already we have admitted that, in some directions, this method is spontaneously pursued. Already we have shown that there is a tendency for educational systems to gravitate towards the true system. And here we may remark, as before, that the intensity of this natural reaction will, in the beneficent order of things, adjust itself to the requirements—that this parental displeasure will vent itself in violent measures during comparatively barbarous times, when children are also comparatively barbarous ; and will express itself less cruelly in those more advanced social states in which, by implication, the children are amenable to milder treatment. But what it chiefly concerns us here to observe is, that the manifesta-

tion of strong parental displeasure, produced by one of these graver offences, will be potent for good, just in proportion to the warmth of the attachment existing between parent and child. Just in proportion as the discipline of natural consequences has been consistently pursued in other cases, will it be efficient in this case. Proof is within the experience of all, if they will look for it.

For does not every one know that when he has offended another, the amount of regret he feels (of course, leaving worldly considerations out of the question) varies with the degree of sympathy he has for that other ? Is he not conscious that when the person offended is an enemy, the having given him annoyance is apt to be a source rather of secret satisfaction than of sorrow ? Does he not remember that where umbrage has been taken by some total stranger, he has felt much less concern than he would have done had such umbrage been taken by one with whom he was intimate ? While, conversely, has not the anger of an admired and cherished friend been regarded by him as a serious misfortune, long and keenly regretted ? Well, the effects of parental displeasure on children must similarly vary with the pre-existing relationship. Where there is an established alienation, the feeling of a child who has transgressed is a purely selfish fear of the impending physical penalties or deprivations ; and after these have been inflicted, the injurious antagonism and dislike which result, add to the alienation. On the contrary, where there exists a warm filial affection produced by a consistent parental friendship, the state of mind caused by parental displeasure is not only a salutary check to future misconduct of like kind, but is intrinsically salutary. The moral pain consequent

on having, for the time being, lost so loved a friend, stands in place of the physical pain usually inflicted; and proves equally, if not more, efficient. While instead of the fear and vindictiveness excited by the one course, there are excited by the other a sympathy with parental sorrow, a genuine regret for having caused it, and a desire, by some atonement, to re-establish the friendly relationship. Instead of bringing into play those egotistic feelings whose predominance is the cause of criminal acts, there are brought into play those altruistic feelings which check criminal acts. Thus the discipline of natural consequences is applicable to grave as well as trivial faults; and the practice of it conduces not simply to the repression, but to the eradication of such faults.

In brief, the truth is that savageness begets savageness, and gentleness begets gentleness. Children who are unsympathetically treated become unsympathetic; whereas treating them with due fellow-feeling is a means of cultivating their fellow-feeling. With family governments as with political ones, a harsh despotism itself generates a great part of the crimes it has to repress; while on the other hand a mild and liberal rule both avoids many causes of dissension, and so ameliorates the tone of feeling as to diminish the tendency to transgression. As John Locke long since remarked, "Great severity of punishment does but very little good, nay, great harm, in education; and I believe it will be found that, *cæteris paribus*, those children who have been most chastised seldom make the best men." In confirmation of which opinion we may cite the fact not long since made public by Mr. Rogers, Chaplain of the Pentonville Prison, that those juvenile criminals who have been whipped are those who most frequently

return to prison. Conversely, the beneficial effects of a kinder treatment, are well illustrated in a fact stated to us by a French lady, in whose house we recently stayed in Paris. Apologising for the disturbance daily caused by a little boy who was unmanageable both at home and at school, she expressed her fear that there was no remedy save that which had succeeded in the case of an elder brother; namely, sending him to an English school. She explained that at various schools in Paris this elder brother had proved utterly untractable; that in despair they had followed the advice to send him to England; and that on his return home he was as good as he had before been bad. This remarkable change she ascribed entirely to the comparative mildness of the English discipline.

After the foregoing exposition of principles, our remaining space may best be occupied by a few of the chief maxims and rules deducible from them; and with a view to brevity we will put these in a hortatory form.

Do not expect from a child any great amount of moral goodness. During early years every civilised man passes through that phase of character exhibited by the barbarous race from which he is descended. As the child's features—flat nose, forward-opening nostrils, large lips, wide-apart eyes, absent frontal sinus, &c.—resemble for a time those of the savage, so, too, do his instincts. Hence the tendencies to cruelty, to thieving, to lying, so general among children—tendencies which, even without the aid of discipline, will become more or less modified just as the features do. The popular idea that children are "innocent," while it is true with respect to evil *knowledge*, is totally false with respect to evil *impulses*; as half an hour's observation

in the nursery will prove to any one. Boys when left to themselves, as at public schools, treat each other more brutally than men do; and were they left to themselves at an earlier age their brutality would be still more conspicuous.

Not only is it unwise to set up a high standard of good conduct for children, but it is even unwise to use very urgent incitements to good conduct. Already most people recognise the detrimental results of intellectual precocity; but there remains to be recognised the fact that *moral precocity* also has detrimental results. Our higher moral faculties, like our higher intellectual ones, are comparatively complex. By consequence both are comparatively late in their evolution. And with the one as with the other, an early activity produced by stimulation will be at the expense of the future character. Hence the not uncommon anomaly that those who during childhood were models of juvenile goodness, by-and-by undergo a seemingly inexplicable change for the worse, and end by being not above but below par; while relatively exemplary men are often the issue of a childhood by no means promising.

Be content, therefore, with moderate measures and moderate results. Bear in mind that a higher morality, like a higher intelligence, must be reached by slow growth; and you will then have patience with those imperfections which your child hourly displays. You will be less prone to that constant scolding, and threatening, and forbidding, by which many parents induce a chronic domestic irritation, in the foolish hope that they will thus make their children what they should be.

This liberal form of domestic government, which does not seek despotically

to regulate all the details of a child's conduct, necessarily results from the system we advocate. Satisfy yourself with seeing that your child always suffers the natural consequences of his actions, and you will avoid that excess of control in which so many parents err. Leave him wherever you can to the discipline of experience, and you will save him from that hot-house virtue which over-regulation produces in yielding natures, or that demoralising antagonism which it produces in independent ones.

By aiming in all cases to insure the natural reactions to your child's actions, you will put an advantageous check on your own temper. The method of moral education pursued by many, we fear by most, parents, is little else than that of venting their anger in the way that first suggests itself. The slaps, and rough shakings, and sharp words, with which a mother commonly visits her offspring's small offences (many of them not offences considered intrinsically), are generally but the manifestations of her ill-controlled feelings—result much more from the promptings of those feelings than from a wish to benefit the offenders. But by pausing in each case of transgression to consider what is the normal consequence, and how it may best be brought home to the transgressor, some little time is obtained for the mastery of yourself; the mere blind anger first aroused settles down into a less vehement feeling, and one not so likely to mislead you.

Do not, however, seek to behave as a passionless instrument. Remember that besides the natural reactions to your child's actions which the working of things tends to bring round on him, your own approbation or disapprobation is also a natural reaction, and one of the

ordained agencies for guiding him. The error we have been combating is that of *substituting* parental displeasure and its artificial penalties for the penalties which Nature has established. But while it should not be *substituted* for these natural penalties, we by no means argue that it should not *accompany* them. Though the *secondary* kind of punishment should not usurp the place of the *primary* kind; it may, in moderation, rightly supplement the primary kind. Such amount of sorrow or indignation as you feel, should be expressed in words or manner: subject, of course, to the approval of your judgment. The kind and degree of feeling produced in you, will necessarily depend on your own character; and it is therefore useless to say it should be this or that. Nevertheless you may endeavour to modify the feeling into that which you believe ought to be entertained. Beware, however, of the two extremes; not only in respect of the intensity, but in respect of the duration, of your displeasure. On the one hand, avoid that weak impulsiveness, so general among mothers, which scolds and forgives almost in the same breath. On the other hand, do not unduly continue to show estrangement of feeling, lest you accustom your child to do without your friendship, and so lose your influence over him. The moral reactions called forth from you by your child's actions, you should as much as possible assimilate to those which you conceive would be called forth from a parent of perfect nature.

Be sparing of commands. Command only when other means are inexplicable, or have failed. "In frequent orders the parents' advantage is more considered than the child's," says Richter. As in primitive societies a breach of law is punished, not so much because it is

intrinsically wrong as because it is a disregard of the king's authority—a rebellion against him; so in many families, the penalty visited on a transgressor is prompted less by reprobation of the offence than by anger at the disobedience. Listen to the ordinary speeches—"How *dare* you disobey me?" "I tell you I'll *make* you do it, sir". "I'll soon teach you who is *master*"—and then consider what the words, the tone, and the manner imply. A determination to subjugate is far more conspicuous in them than anxiety for the child's welfare. For the time being the attitude of mind differs but little from that of a despot bent on punishing a recalcitrant subject. The right-feeling parent, however, like the philanthropic legislator, will rejoice not in coercion, but in dispensing with coercion. He will do without law wherever other modes of regulating conduct can be successfully employed; and he will regret the having recourse to law when law is necessary. As Richter remarks—"The best rule in politics is said to be '*pas trop gouverner*': it is also true in education." And in spontaneous conformity with this maxim, parents whose lust of dominion is restrained by a true sense of duty, will aim to make their children control themselves as much as possible, and will fall back upon absolutism only as a last resort.

But whenever you *do* command, command with decision and consistency. If the case is one which really cannot be otherwise dealt with, then issue your fiat, and having issued it, never afterwards swerve from it. Consider well what you are going to do; weigh all the consequences; think whether you have adequate firmness of purpose; and then, if you finally make the law, enforce obedience at whatever cost. Let your

penalties be like the penalties inflicted by inanimate Nature—inevitable. The hot cinder burns a child the first time he seizes it ; it burns him the second time ; it burns him the third time ; it burns him every time ; and he very soon learns not to touch the hot cinder. If you are equally consistent—if the consequences which you tell your child will follow specified acts, follow with like uniformity, he will soon come to respect your laws as he does those of Nature. And this respect once established, will prevent endless domestic evils. Of errors in education one of the worst is inconsistency. As in a community, crimes multiply when there is no certain administration of justice ; so in a family, an immense increase of transgressions results from a hesitating or irregular infliction of punishments. A weak mother, who perpetually threatens and rarely performs—who makes rules in haste and repents of them at leisure—who treats the same offence now with severity and now with leniency, as the passing humour dictates, is laying up miseries for herself and her children. She is making herself contemptible in their eyes ; she is setting them an example of uncontrolled feelings ; she is encouraging them to transgress by the prospect of probable impunity ; she is entailing endless squabbles and accompanying damage to her own temper and the tempers of her little ones ; she is reducing their minds to a moral chaos, which after-years of bitter experience will with difficulty bring into order. Better even a barbarous form of domestic government carried out consistently than a humane one inconsistently carried out. Again we say, avoid coercive measures wherever it is possible to do so ; but when you find despotism really neces-

Remember that the aim of your discipline should be to produce a *self-governing* being ; not to produce a being to be *governed by others*. Were your children fated to pass their lives as slaves, you could not too much accustom them to slavery during their childhood ; but as they are by-and-by to be free men, with no one to control their daily conduct, you cannot too much accustom them to self-control while they are still under your eye. This it is which makes the system of discipline by natural consequences, so especially appropriate to the social state which we in England have now reached. In feudal times, when one of the chief evils the citizen had to fear was the anger of his superiors, it was well that during childhood, parental vengeance should be a chief means of government. But now that the citizen has little to fear from any one—now that the good or evil which he experiences is mainly that which in the order of things results from his own conduct, he should from his first years begin to learn, experimentally, the good or evil consequences which naturally follow this or that conduct. Aim, therefore, to diminish the parental government, as fast as you can substitute for it in your child's mind that self-government arising from a foresight of results. During infancy a considerable amount of absolutism is necessary. A three-year old urchin playing with an open razor, cannot be allowed to learn by this discipline of consequences ; for the consequences may be too serious. But as intelligence increases, the number of peremptory interferences may be, and should be, diminished ; with the view of gradually ending them as maturity is approached. All transitions are dangerous ; and the most dangerous is the transition from the restraint of

the world. Hence the importance of pursuing the policy we advocate; which, by cultivating a boy's faculty of self-restraint, by continually increasing the degree in which he is left to his self-restraint, and by so bringing him, step by step, to a state of unaided self-restraint, obliterates the ordinary sudden and hazardous change from externally-governed youth to internally-governed maturity. Let the history of your domestic rule typify, in little, the history of our political rule: at the outset, autocratic control, where control is really needful; by-and-by an incipient constitutionalism, in which the liberty of the subject gains some express recognition; successive extensions of this liberty of the subject; gradually ending in parental abdication.

Do not regret the display of considerable self-will on the part of your children. It is the correlative of that diminished coerciveness so conspicuous in modern education. The greater tendency to assert freedom of action on the one side, corresponds to the smaller tendency to tyrannise on the other. They both indicate an approach to the system of discipline we contend for, under which children will be more and more led to rule themselves by the experience of natural consequences; and they are both accompaniments of our more advanced social state. The independent English boy is the father of the independent English man; and you cannot have the last without the first. German teachers say that they had rather manage a dozen German boys than one English one. Shall we, therefore, wish that our boys had the manageableness of German ones, and with it the submissiveness and political serfdom of adult Germans? Or shall we not rather tolerate in our boys those feelings which make them

free men, and modify our methods accordingly?

Lastly, always recollect that to educate rightly is not a simple and easy thing, but a complex and extremely difficult thing, the hardest task which devolves on adult life. The rough and ready style of domestic government is indeed practicable by the meanest and most uncultivated intellects. Slaps and sharp words are penalties that suggest themselves alike to the least reclaimed barbarian and the stolidest peasant. Even brutes can use this method of discipline; as you may see in the growl and half-bite with which a bitch will check a too-exigent puppy. But if you would carry out with success a rational and civilised system, you must be prepared for considerable mental exertion—for some study, some ingenuity, some patience, some self-control. You will have habitually to consider what are the results which in adult life follow certain kinds of acts; and you must then devise methods by which parallel results shall be entailed on the parallel acts of your children. It will daily be needful to analyse the motives of juvenile conduct—to distinguish between acts that are really good and those which, though simulating them, proceed from inferior impulses; while you will have to be ever on your guard against the cruel mistake not unfrequently made, of translating neutral acts into transgressions, or ascribing worse feelings than were entertained. You must more or less modify your method to suit the disposition of each child; and must be prepared to make further modifications as each child's disposition enters on a new phase. Your faith will often be taxed to maintain the requisite perseverance in a course which seems to produce little or no effect. Especially if you are dealing

with children who have been wrongly treated, you must be prepared for a lengthened trial of patience before succeeding with better methods; since that which is not easy even where a right state of feeling has been established from the beginning, becomes doubly difficult when a wrong state of feeling has to be set right. Not only will you have constantly to analyse the motives of your children, but you will have to analyse your own motives—to discriminate between those internal suggestions springing from a true parental solicitude and those which spring from your own selfishness, your love of ease, your lust of dominion. And then, more trying still, you will have not only to detect, but to curb these baser impulses. In brief, you will have to carry on your own higher education at the same time that you are educating your children. Intellectually you must cultivate to good purpose that most complex of subjects—human nature and its laws, as exhibited in your children, in yourself, and in the world. Morally, you must keep in constant exercise your higher feelings, and restrain your lower. It is a truth yet remaining to be recognised, that the last stage in the mental development of each man and woman is to be reached only through a proper discharge of the parental duties. And when this truth is recognised, it will be seen how admirable is the arrangement through which human beings are led by their strongest affections to subject themselves to a discipline that they would else elude.

While some will regard this conception of education as it should be, with doubt and discouragement, others will, we think, perceive in the exalted ideal which it involves, evidence of its truth. That it cannot be realised by the impulsive, the unsympathetic, and the short-

sighted, but demands the higher attributes of human nature, they will see to be evidence of its fitness for the more advanced state of humanity. Though it calls for much labour and self-sacrifice, they will see that it promises an abundant return of happiness, immediate and remote. They will see that while in its injurious effects on both parent and child a bad system is twice cursed, a good system is twice blessed—it blesses him that trains and him that's trained.

CHAPTER IV.

PHYSICAL EDUCATION

EQUALLY at the squire's table after the withdrawal of the ladies, at the farmers' market ordinary, and at the village ale-house, the topic which, after the political question of the day, excites the most general interest, is the management of animals. Riding home from hunting, the conversation usually gravitates towards horse-breeding, and pedigrees, and comments on this or that "good point"; while a day on the moors is very unlikely to end without something being said on the treatment of dogs. When crossing the fields together from church, the tenants of adjacent farms are apt to pass from criticisms on the sermon to criticisms on the weather, the crops, and the stock; and thence to slide into discussions on the various kinds of fodder and their feeding qualities. Hodge and Giles, after comparing notes over their respective pig-styes, show by their remarks that they have been observant of their masters' beasts and sheep; and of the effects produced on them by this or that kind of treatment. Nor is it only among the

rural population that the regulations of the kennel, the stable, the cow-shed, and the sheep-pen, are favourite subjects. In towns, too, the numerous artisans who keep dogs, the young men who are rich enough to now and then indulge their sporting tendencies, and their more staid seniors who talk over agricultural progress or read Mr. Mechi's annual reports and Mr. Caird's letters to the *Times*, form, when added together, a large portion of the inhabitants. Take the adult males throughout the kingdom, and a great majority will be found to show some interest in the breeding, rearing, or training of animals of one kind or other.

But, during after-dinner conversations, or at other times of like intercourse, who hears anything said about the rearing of children? When the country gentleman has paid his daily visit to the stable, and personally inspected the condition and treatment of his horses; when he has glanced at his minor live stock, and given directions about them; how often does he go up to the nursery and examine into its dietary, its hours, its ventilation? On his library-shelves may be found White's *Farriery*, Stephens's *Book of the Farm*, Nimrod *On the Condition of Hunters*; and with the contents of these he is more or less familiar; but how many books has he read on the management of infancy and childhood? The fattening properties of oil-cake, the relative values of hay and chopped straw, the dangers of unlimited clover, are points on which every landlord, farmer, and peasant has some knowledge; but what percentage of them inquire whether the food they give their children is adapted to the constitutional needs of growing boys and girls? Perhaps the business-interests of these classes will be assigned as accounting for this anomaly. The

explanation is inadequate, however; seeing that the same contrast holds among other classes. Of a score of townspeople, few, if any, would prove ignorant of the fact that it is undesirable to work a horse soon after it has eaten; and yet, of this same score, supposing them all to be fathers, probably not one would be found who had considered whether the time elapsing between his children's dinner and their resumption of lessons was sufficient. Indeed, on cross-examination, nearly every man would disclose the latent opinion that the regimen of the nursery was no concern of his. "Oh, I leave all those things to the women," would probably be the reply. And in most cases the tone of this reply would convey the implication, that such cares are not consistent with masculine dignity.

Regarded from any but a conventional point of view, the fact seems strange that while the raising of first-rate bullocks is an occupation on which educated men willingly bestow much time and thought, the bringing up of fine human beings is an occupation tacitly voted unworthy of their attention. Mammas who have been taught little but languages, music, and accomplishments, aided by nurses full of antiquated prejudices, are held competent regulators of the food, clothing, and exercise of children. Meanwhile the fathers read books and periodicals, attend agricultural meetings, try experiments, and engage in discussions, all with the view of discovering how to fatten prize pigs! We see infinite pains taken to produce a racer that shall win the Derby: none to produce a modern athlete. Had Gulliver narrated of the Laptians that the men vied with each other in learning how best to rear the offspring of other creatures, and were careless of learning how best to rear their own offspring, he

would have paralleled any of the other absurdities he ascribes to them.

The matter is a serious one, however. Ludicrous as is the antithesis, the fact it expresses is not less disastrous. As remarks a suggestive writer, the first requisite to success in life is "to be a good animal"; and to be a nation of good animals is the first condition to national prosperity. Not only is it that the event of a war often turns on the strength and hardness of soldiers; but it is that the contests of commerce are in part determined by the bodily endurance of producers. Thus far we have found no reason to fear trials of strength with other races in either of these fields. But there are not wanting signs that our powers will presently be taxed to the uttermost. The competition of modern life is so keen, that few can bear the required application without injury. Already thousands break down under the high pressure they are subject to. If this pressure continues to increase, as it seems likely to do, it will try severely even the soundest constitutions. Hence it is becoming of especial importance that the training of children should be so carried on, as not only to fit them mentally for the struggle before them, but also to make them physically fit to bear its excessive wear and tear.

Happily the matter is beginning to attract attention. The writings of Mr. Kingsley indicate a reaction against over-culture; carried perhaps, as reactions usually are, somewhat too far. Occasional letters and leaders in the newspapers have shown an awakening interest in physical training. And the formation of a school, significantly nicknamed that of "muscular Christianity," implies a growing opinion that our present methods of bringing up children do

not sufficiently regard the welfare of the body. The topic is evidently ripe for discussion.

To conform the regimen of the nursery and the school to the established truths of modern science—this is the desideratum. It is time that the benefits which our sheep and oxen are deriving from the investigations of the laboratory, should be participated in by our children. Without calling in question the great importance of horse-training and pig-feeding, we would suggest that, as the rearing of well-grown men and women is also of some moment, these conclusions which theory indicates and practice indorses, ought to be acted on in the last case as in the first. Probably not a few will be startled—perhaps offended—by this collocation of ideas. But it is a fact not to be disputed, and to which we must reconcile ourselves, that man is subject to the same organic laws as inferior creatures. No anatomist, no physiologist, no chemist, will for a moment hesitate to assert, that the general principles which are true of the vital processes in animals are equally true of the vital processes in man. And a candid admission of this fact is not without its reward: namely, that the generalisations established by observation and experiment on brutes, become available for human guidance. Rudimentary as is the Science of Life, it has already attained to certain fundamental principles underlying the development of all organisms, the human included. That which has now to be done, and that which we shall endeavour in some measure to do, is to trace the bearings of these fundamental principles on the physical training of childhood and youth.

The rhythmical tendency which is traceable in all departments of social

life—which is illustrated in the access of despotism after revolution, or, among ourselves, in the alternation of reforming epochs and conservative epochs—which, after a dissolute age, brings an age of asceticism, and conversely,—which, in commerce, produces the recurring inflations and panics—which carries the devotees of fashion from one absurd extreme to the opposite one :—this rhythmical tendency affects also our table-habits, and by implication, the dietary of the young. After a period distinguished by hard drinking and hard eating, has come a period of comparative sobriety, which, in teetotalism and vegetarianism, exhibits extreme forms of protest against the riotous living of the past. And along with this change in the regimen of adults, has come a parallel change in the regimen for boys and girls. In past generations the belief was, that the more a child could be induced to eat the better ; and even now, among farmers and in remote districts, where traditional ideas most linger, parents may be found who tempt their children into repletion. But among the educated classes, who chiefly display this reaction towards abstemiousness, there may be seen a decided leaning to the under-feeding, rather than the over-feeding of children. Indeed their disgust for by-gone animalism, is more clearly shown in the treatment of their offspring than in the treatment of themselves ; for while their disguised asceticism is, in so far as their personal conduct is concerned, kept in check by their appetites, it has full play in legislating for juveniles.

That over-feeding and under-feeding are both bad, is a truism. Of the two, however, the last is the worst. As writes a high authority, "the effects of casual repletion are less prejudicial, and more

easily corrected, than those of inanition."¹ Besides, where there has been no injudicious interference, repletion seldom occurs. "Excess is the vice rather of adults than of the young, who are rarely either gourmands or epicures, unless through the fault of those who rear them."² This system of restriction which many parents think so necessary, is based upon inadequate observation, and erroneous reasoning. There is an over-legislation in the nursery, as well as an over-legislation in the State ; and one of the most injurious forms of it is this limitation in the quantity of food.

"But are children to be allowed to surfeit themselves? Shall they be suffered to take their fill of dainties and make themselves ill, as they certainly will do?" As thus put, the question admits of but one reply. But as thus put, it assumes the point at issue. We contend that, as appetite is a good guide to all the lower creation—as it is a good guide to the infant—as it is a good guide to the invalid—as it is a good guide to the differently-placed races of men—and as it is a good guide for every adult who leads a healthful life ; it may safely be inferred that it is a good guide for childhood. It would be strange indeed were it here alone untrustworthy.

Perhaps some will read this reply with impatience ; being able, as they think, to cite facts totally at variance with it. It may appear absurd if we deny the relevancy of these facts. And yet the paradox is quite defensible. The truth is, that the instances of excess which such persons have in mind, are usually the *consequences* of the restrictive system they seem to justify. They are the sensual reactions caused by an ascetic regimen. They illustrate on a small

scale that commonly-remarked truth, that those who during youth have been subject to the most rigorous discipline, are apt afterwards to rush into the wildest extravagances. They are analogous to those frightful phenomena, once not uncommon in convents, where nuns suddenly lapsed from the extreme austerities into an almost demoniac wickedness. They simply exhibit the uncontrollable vehemence of long-denied desires. Consider the ordinary tastes and the ordinary treatment of children. The love of sweets is conspicuous and almost universal among them. Probably ninety-nine people in a hundred presume that there is nothing more in this than gratification of the palate; and that, in common with other sensual desires, it should be discouraged. The physiologist, however, whose discoveries lead him to an ever-increasing reverence for the arrangements of things, suspects something more in this love of sweets than is currently supposed; and inquiry confirms the suspicion. He finds that sugar plays an important part in the vital processes. Both saccharine and fatty matters are eventually oxidised in the body; and there is an accompanying evolution of heat. Sugar is the form to which sundry other compounds have to be reduced before they are available as heat-making food; and this *formation* of sugar is carried on in the body. Not only is starch changed into sugar in the course of digestion, but it has been proved by M. Claude Bernard that the liver is a factory in which other constituents of food are transformed into sugar: the need for sugar being so imperative that it is even thus produced from nitrogenous substances when no others are given. Now, when to the fact that children have a marked desire for this valuable heat-food, we join the

fact that they have usually a marked dislike to that food which gives out the greatest amount of heat during oxidation (namely, fat), we have reason for thinking that excess of the one compensates for defect of the other—that the organism demands more sugar because it cannot deal with much fat. Again, children are fond of vegetable acids. Fruits of all kinds are their delight; and, in the absence of anything better, they will devour unripe gooseberries and the sourest of crabs. Now not only are vegetable acids, in common with mineral ones, very good tonics, and beneficial as such when taken in moderation, but they have, when administered in their natural forms, other advantages. "Ripe fruit," says Dr. Andrew Combe, "is more freely given on the Continent than in this country; and, particularly when the bowels act imperfectly, it is often very useful." See, then, the discord between the instinctive wants of children and their habitual treatment. Here are two dominant desires, which in all probability express certain needs of the child's constitution; and not only are they ignored in the nursery-regimen, but there is a general tendency to forbid the gratification of them. Bread-and-milk in the morning, tea and bread-and-butter at night, or some dietary equally insipid, is rigidly adhered to; and any ministration to the palate is thought needless, or rather, wrong. What is the consequence? When, on fête-days, there is unlimited access to good things—when a gift of pocket-money brings the contents of the confectioner's window within reach, or when by some accident the free run of a fruit-garden is obtained; then the long-denied, and therefore intense, desires lead to great excesses. There is an impromptu carnival, due partly to release from past restraints, and

partly to the consciousness that a long Lent will begin on the morrow. And then, when the evils of repletion display themselves, it is argued that children must not be left to the guidance of their appetites! These disastrous results of artificial restrictions, are themselves cited as proving the need for further restrictions! We contend therefore, that the reasoning used to justify this system of interference is vicious. We contend that, were children allowed daily to partake of these more sapid edibles, for which there is a physiological requirement, they would rarely exceed, as they now mostly do when they have the opportunity: were fruit, as Dr. Combe recommends, "to constitute a part of the regular food" (given, as he advises, not between meals, but along with them), there would be none of that craving which prompts the devouring of crabs and sloes. And similarly in other cases.

Not only is it that the *à priori* reasons for trusting the appetites of children are strong; and that the reasons assigned for distrusting them are invalid; but it is that no other guidance is worthy of confidence. What is the value of this parental judgment, set up as an alternative regulator? When to "Oliver asking for more," the mamma or governess says "No," on what data does she proceed? She *thinks* he has had enough. But where are her grounds for so thinking? Has she some secret understanding with the boy's stomach—some *clairvoyant* power enabling her to discern the needs of his body? If not, how can she safely decide? Does she not know that the demand of the system for food is determined by numerous and involved causes—varies with the temperature, with the hygrometric state of the air, with the electric state of the air—varies also according to the exercise taken, accord-

ing to the kind and quantity of food eaten at the last meal, and according to the rapidity with which the last meal was digested? How can she calculate the result of such a combination of causes? As we heard said by the father of a five-years-old boy, who stands a head taller than most of his age, and is proportionately robust, rosy, and active:—"I can see no artificial standard by which to mete out his food. If I say, 'this much is enough,' it is a mere guess; and the guess is as likely to be wrong as right. Consequently, having no faith in guesses, I let him eat his fill." And, certainly, any one judging of his policy by its effects, would be constrained to admit its wisdom. In truth, this confidence, with which most persons legislate for the stomachs of their children, proves their unacquaintance with physiology: if they knew more, they would be more modest. "The pride of science is humble when compared with the pride of ignorance." If any one would learn how little faith is to be placed, in human judgments, and how much in the pre-established arrangement of things, let him compare the rashness of the inexperienced physician with the caution of the most advanced; or let him dip into Sir John Forbes's work, *On Nature and Art in the Cure of Disease*; and he will see that, in proportion as men gain knowledge of the laws of life, they come to have less confidence in themselves, and more in Nature.

Turning from the question of *quantity* of food to that of *quality*, we may discern the same ascetic tendency. Not simply a restricted diet, but a comparatively low diet, is thought proper for children. The current opinion is, that they should have but little animal food. Among the less wealthy classes, economy seems to have dictated this opinion—the wish has been

father to the thought. Parents not affording to buy much meat, answer the petitions of juveniles with—"Meat is not good for little boys and girls"; and this, at first probably nothing but a convenient excuse, has by repetition grown into an article of faith. While the classes with whom cost is no consideration, have been swayed partly by the example of the majority, partly by the influence of nurses drawn from the lower classes, and in some measure by the reaction against past animalism.

If, however, we inquire for the basis of this opinion, we find little or none. It is a dogma repeated and received without proof, like that which, for thousands of years, insisted on swaddling-clothes. Very probably for the infant's stomach, not yet endowed with much muscular power, meat, which requires considerable trituration before it can be made into chyme, is an unfit aliment.* But this objection does not tell against animal food from which the fibrous part has been extracted; nor does it apply when, after the lapse of two or three years, considerable muscular vigour has been acquired. And while the evidence in support of this dogma, partially valid in the case of very young children, is not valid in the case of older children, who are, nevertheless, ordinarily treated in conformity with it, the adverse evidence is abundant and conclusive. The verdict of science is exactly opposite to the popular opinion. We have put the question to two of our leading physicians, and to several of the most distinguished physiologists, and they uniformly agree in the conclusion, that children should have a diet not *less* nutritive, but, if anything, *more* nutritive than that of adults.

The grounds for this conclusion are obvious, and the reasoning simple. It

needs but to compare the vital processes of a man with those of a boy, to see that the demand for sustenance is relatively greater in the boy than in the man. What are the ends for which a man requires food? Each day his body undergoes more or less wear—wear through muscular exertion, wear of the nervous system through mental actions, wear of the viscera in carrying on the functions of life; and the tissue thus wasted has to be renewed. Each day, too, by radiation, his body loses a large amount of heat; and as, for the continuance of the vital actions, the temperature of the body must be maintained, this loss has to be compensated by a constant production of heat: to which end certain constituents of the body are ever undergoing oxidation. To make up for the day's waste, and to supply fuel for the day's expenditure of heat, are, then, the sole purposes for which the adult requires food. Consider now, the case of the boy. He, too, wastes the substance of his body by action; and it needs but to note his restless activity to see that, in proportion to his bulk, he probably wastes as much as a man. He, too, loses heat by radiation; and, as his body exposes a greater surface in proportion to its mass than does that of a man, and therefore loses heat more rapidly, the quantity of heat-food he requires is, bulk for bulk, greater than that required by a man. So that even had the boy no other vital processes to carry on than the man has, he would need, relatively to his size, a somewhat larger supply of nutriment. But, besides repairing his body and maintaining its heat, the boy has to make new tissue—to grow. After waste and thermal loss have been provided for, such surplus of nutriment as remains, goes to the further building up of the frame; and only in

virtue of this surplus is normal growth possible; the growth that sometimes takes place in the absence of it, causing a manifest prostration consequent upon defective repair. It is true that because of a certain mechanical law which cannot be here explained, a small organism has an advantage over a large one in the ratio between the sustaining and destroying forces—an advantage, indeed, to which the very possibility of growth is owing. But this admission only makes it the more obvious that though much adverse treatment may be borne without this excess of vitality being quite out-balanced; yet any adverse treatment, by diminishing it, must diminish the size or structural perfection reached. How peremptory is the demand of the unfolding organism for materials, is seen alike in that "school-boy hunger," which after-life rarely parallels in intensity, and in the comparatively quick return of appetite. And if there needs further evidence of this extra necessity for nutriment, we have it in the fact that, during the famines following shipwrecks and other disasters, the children are the first to die.

This relatively greater need for nutriment being admitted, as it must be, the question that remains is—shall we meet it by giving an excessive quantity of what may be called dilute food, or a more moderate quantity of concentrated food? The nutriment obtainable from a given weight of meat is obtainable only from a larger weight of bread, or from a still larger weight of potatoes, and so on. To fulfil the requirement, the quantity must be increased as the nutritiveness is diminished. Shall we, then, respond to the extra wants of the growing child by giving an adequate quantity of food as good as that of adults? Or, regardless of the fact that its stomach has to dispose

of a relatively larger quantity even of this good food, shall we further tax it by giving an inferior food in still greater quantity?

The answer is tolerably obvious. The more the labour of digestion is economised, the more energy is left for the purpose of growth and action. The functions of the stomach and intestines cannot be performed without a large supply of blood and nervous power; and in the comparative lassitude that follows a hearty meal, every adult has proof that this supply of blood and nervous power is at the expense of the system at large. If the requisite nutriment is obtained from a great quantity of innutritious food, more work is entailed on the viscera than when it is obtained from a moderate quantity of nutritious food. This extra work is so much loss—a loss which in children shows itself either in diminished energy, or in smaller growth, or in both. The inference is, then, that they should have a diet which combines, as much as possible, nutritiveness and digestibility.

It is doubtless true that boys and girls may be reared upon an exclusively, or almost exclusively, vegetable diet. Among the upper classes are to be found children to whom comparatively little meat is given; and who, nevertheless, grow and appear in good health. Animal food is scarcely tasted by the offspring of labouring people, and yet they reach a healthy maturity. But these seemingly adverse facts have by no means the weight commonly supposed. In the first place, it does not follow that those who in early years flourish on bread and potatoes, will eventually reach a fine development; and a comparison between the agricultural labourers and the gentry, in England, or between the middle and lower classes in France,

is by no means in favour of vegetable feeders. In the second place, the question is not simply a question of *bulk*, but also a question of *quality*. A soft, flabby flesh makes as good a show as a firm one; but though to the careless eye, a child of full, flaccid tissue may appear the equal of one whose fibres are well toned, a trial of strength will prove the difference. Obesity in adults is often a sign of feebleness. Men lose weight in training. Hence the appearance of these low-fed children is far from conclusive. In the third place, besides *size* we have to consider *energy*. Between children of the meat-eating classes and those of the bread-and-potato-eating classes, there is a marked contrast in this respect. Both in mental and physical vivacity the peasant-boy is greatly inferior to the son of a gentleman.

If we compare different kinds of animals, or different races of men, or the same animals or men when differently fed, we find still more distinct proof that *the degree of energy essentially depends on the nutritiveness of the food*.

In a cow, subsisting on so innutritive a food as grass, we see that the immense quantity required necessitates an enormous digestive system; that the limbs, small in comparison with the body, are burdened by its weight; that in carrying about this heavy body and digesting this excessive quantity of food, much force is expended; and that, having but little remaining, the creature is sluggish. Compare with the cow a horse—an animal of nearly allied structure, but habituated to a more concentrated diet. Here the body, and more especially its abdominal region, bears a smaller ratio to the limbs; the powers are not taxed by the support of such massive viscera nor the digestion of so bulky a food; and, as a consequence, there is greater

locomotive energy and considerable vivacity. If, again, we contrast the stolid inactivity of the graminivorous sheep with the liveliness of the dog, subsisting on flesh or farinaceous matters, or a mixture of the two, we see a difference similar in kind, but still greater in degree. And after walking through the Zoological Gardens, and noting the restlessness with which the carnivorous animals pace up and down their cages, it needs but to remember that none of the herbivorous animals habitually display this superfluous energy, to see how clear is the relation between concentration of food and degree of activity.

That these differences are not directly consequent on differences of constitution, as some may argue; but are directly consequent on differences in the food which the creatures are constituted to subsist on; is proved by the fact, that they are observable between different divisions of the same species. The varieties of the horse furnish an illustration. Compare the big-bellied, inactive, spiritless cart-horse with a racer or hunter, small in the flanks and full of energy; and then call to mind how much less nutritive is the diet of the one than that of the other. Or take the case of mankind. Australians, Bushmen, and others of the lowest savages who live on roots and berries, varied by larvæ of insects and the like meagre fare, are comparatively puny in stature, have large abdomens, soft and undeveloped muscles, and are quite unable to cope with Europeans, either in a struggle or in prolonged exertion. Count up the wild races who are well grown, strong and active, as the Kaffirs, North-American Indians, and Patagonians, and you find them large consumers of flesh. The ill-fed Hindoo goes down before the Englishman fed on more nutritive food.

to whom he is as inferior in mental as in physical energy. And generally, we think, the history of the world shows that the well-fed races have been the energetic and dominant races.

Still stronger, however, becomes the argument, when we find that the same individual animal is capable of more or less exertion according as its food is more or less nutritious. This has been demonstrated in the case of the horse. Though flesh may be gained by a grazing horse, strength is lost; as putting him to hard work proves. "The consequence of turning horses out to grass is relaxation of the muscular system." "Grass is a very good preparation for a bullock for Smithfield market, but a very bad one for a hunter." It was well known of old that, after passing the summer in the fields, hunters required some months of stable-feeding before becoming able to follow the hounds; and that they did not get into good condition till the beginning of the next spring. And the modern practice is that insisted on by Mr. Apperley—"Never to give a hunter what is called 'a summer's run at grass,' and, except under particular and very favourable circumstances, never to turn him out at all." That is to say, never give him poor food: great energy and endurance are to be obtained only by the continued use of nutritive food. So true is this that, as proved by Mr. Apperley, prolonged high-feeding enables a middling horse to equal, in his performances, a first-rate horse fed in the ordinary way. To which various evidences add the familiar fact that, when a horse is required to do double duty, it is the practice to give him beans—a food containing a larger proportion of nitrogenous, or flesh-making material, than his habitual oats.

Once more, in the case of individual

men the truth has been illustrated with equal, or still greater, clearness. We do not refer to men in training for feats of strength, whose regimen, however, thoroughly conforms to the doctrine. We refer to the experience of railway contractors and their labourers. It has been for years a well-established fact that an English navvy, eating largely of flesh, is far more efficient than a Continental navvy living on farinaceous food; so much more efficient, that English contractors for Continental railways found it pay to take their labourers with them. That difference of diet and not difference of race caused this superiority, has been of late distinctly shown. For it has turned out, that when the Continental navvies live in the same style as their English competitors, they presently rise, more or less nearly, to a par with them in efficiency. And to this fact, let us here add the converse one, to which we can give personal testimony based upon six months' experience of vegetarianism, that abstinence from meat entails diminished energy of both body and mind.

Do not these various evidences endorse our argument respecting the feeding of children? Do they not imply that, even supposing the same stature and bulk to be attained on an innutritive as on a nutritive diet, the quantity of tissue is greatly inferior? Do they not establish the position that, where energy as well as growth has to be maintained, it can only be done by high feeding? Do they not confirm the *a priori* conclusion that, though a child of whom little is expected in the way of bodily or mental activity, may thrive tolerably well on farinaceous substances, a child who is daily required, not only to form the due amount of new tissue, but to supply the waste consequent on great muscular action, and the further waste consequent on hard exercise of

brain, must live on substances containing a larger ratio of nutritive matter? And is it not an obvious corollary, that denial of this better food will be at the expense either of growth, or of bodily activity, or of mental activity; as constitution and circumstances determine? We believe no logical intellect will question it. To think otherwise is to entertain in a disguised form the old fallacy of the perpetual-motion schemers—that it is possible to get power out of nothing.

Before leaving the question of food, a few words must be said on another requisite—*variety*. In this respect the dietary of the young is very faulty. If not, like our soldiers, condemned to “twenty years of boiled beef,” our children have mostly to bear a monotony which, though less extreme and less lasting, is quite as clearly at variance with the laws of health. At dinner, it is true, they usually have food that is more or less mixed, and that is changed day by day. But week after week, month after month, year after year, comes the same breakfast of bread-and-milk, or, it may be, oatmeal-porridge. And with like persistence the day is closed, perhaps with a second edition of the bread-and-milk, perhaps with tea and bread-and-butter.

This practice is opposed to the dictates of physiology. The satiety produced by an oft-repeated dish, and the gratification caused by one long a stranger to the palate, are *not* meaningless, as people carelessly assume; but they are the incentives to a wholesome diversity of diet. It is a fact, established by numerous experiments, that there is scarcely any one food, however good, which supplies in due proportions or right forms all the elements required for carrying on the vital processes in a normal manner; whence it follows that frequent change

of food is desirable to balance the supplies of all the elements. It is a further fact, known to physiologists, that the enjoyment given by a much-liked food is a nervous stimulus, which, by increasing the action of the heart and so propelling the blood with increased vigour, aids in the subsequent digestion. And these truths are in harmony with the maxims of modern cattle-feeding, which dictate a rotation of diet.

Not only, however, is periodic change of food very desirable; but, for the same reasons, it is very desirable that a mixture of food should be taken at each meal. The better balance of ingredients, and the greater nervous stimulation, are advantages which hold here as before. If facts are asked for, we may name as one, the comparative ease with which the stomach disposes of a French dinner, enormous in quantity but extremely varied in materials. Few will contend that an equal weight of one kind of food, however well cooked, could be digested with as much facility. If any desire further facts, they may find them in every modern book on the management of animals. Animals thrive best when each meal is made up of several things. The experiments of Goss and Stark “afford the most decisive proof of the advantage, or rather the necessity, of a mixture of substances, in order to produce the compound which is the best adapted for the action of the stomach.”

Should any object, as probably many will, that a rotating dietary for children, and one which also requires a mixture of food at each meal, would entail too much trouble; we reply, that no trouble is thought too great which conduces to the mental development of children, and that for their future welfare, good bodily

development is of still higher importance. Moreover, it seems alike sad and strange that a trouble which is cheerfully taken in the fattening of pigs, should be thought too great in the rearing of children.

One more paragraph, with the view of warning those who may propose to adopt the regimen indicated. The change must not be made suddenly; for continued low-feeding so enfeebles the system, as to disable it from at once dealing with a high diet. Deficient nutrition is itself a cause of dyspepsia. This is true even of animals. "When calves are fed with skimmed milk, or whey, or other poor food, they are liable to indigestion."¹ Hence, therefore, where the energies are low, the transition to a generous diet must be gradual: each increment of strength gained, justifying a fresh addition of nutriment. Further, it should be borne in mind that the concentration of nutriment may be carried too far. A bulk sufficient to fill the stomach is one requisite of a proper meal; and this requisite negatives a diet deficient in those matters which give adequate mass. Though the size of the digestive organs is less in the well-fed civilised races than in the ill-fed savage ones; and though their size may eventually diminish still further; yet, for the time being, the bulk of the ingesta must be determined by the existing capacity. But, paying due regard to these two qualifications, our conclusions are—that the food of children should be highly nutritive; that it should be varied at each meal and at successive meals; and that it should be abundant.

With clothing as with food, the usual tendency is towards an improper scantiness. Here, too, asceticism peeps out.

There is a current theory, vaguely entertained if not put into a definite formula, that the sensations are to be disregarded. They do not exist for our guidance, but to mislead us, seems to be the prevalent belief reduced to its naked form. It is a grave error: we are much more beneficently constituted. It is not obedience to the sensations, but disobedience to them, which is the habitual cause of bodily evils. It is not the eating when hungry, but the eating in the absence of hunger, which is bad. It is not drinking when thirsty, but continuing to drink when thirst has ceased, that is the vice. Harm does not result from breathing that fresh air which every healthy person enjoys; but from breathing foul air, spite of the protest of the lungs. Harm does not result from taking that active exercise which, as every child shows us, Nature strongly prompts; but from a persistent disregard of Nature's promptings. Not that mental activity which is spontaneous and enjoyable does the mischief; but that which is preserved in after a hot or aching head commands desistance. Not that bodily exertion which is pleasant or indifferent, does injury; but that which is continued when exhaustion forbids. It is true that, in those who have long led unhealthy lives, the sensations are not trustworthy guides. People who have for years been almost constantly in-doors, who have exercised their brains very much and their bodies scarcely at all, who in eating have obeyed their clocks without consulting their stomachs, may very likely be misled by their vitiated feelings. But their abnormal state is itself the result of transgressing their feelings: Had they from childhood never disobeyed what we may term the physical conscience, it would not have been seared, but would have remained a faithful monitor.

¹ Morton's *Cyclopædia of Agriculture*.

Among the sensations serving for our guidance are those of heat and cold: and a clothing for children which does not carefully consult these sensations, is to be condemned. The common notion about "hardening" is a grievous delusion. Not a few children are "hardened" out of the world; and those who survive, permanently suffer either in growth or constitution. "Their delicate appearance furnishes ample indication of the mischief thus produced, and their frequent attacks of illness might prove a warning even to unreflecting parents," says Dr. Combe. The reasoning on which this hardening theory rests is extremely superficial. Wealthy parents, seeing little peasant boys and girls playing about in the open-air only half-clothed, and joining with this fact the general healthiness of labouring people, draw the unwarrantable conclusion that the healthiness is the result of the exposure, and resolve to keep their own offspring scantily covered! It is forgotten that these urchins who gambol upon village-greens are in many respects favourably circumstanced — that their lives are spent in almost perpetual play; that they are all day breathing fresh air; and that their systems are not disturbed by over-taxed brains. For aught that appears to the contrary, their good health may be maintained, not in consequence of, but in spite of, their deficient clothing. This alternative conclusion we believe to be the true one; and that an inevitable detriment results from the loss of animal heat to which they are subject.

For when, the constitution being sound enough to bear it, the exposure does produce hardness, it does so at the expense of growth. This truth is displayed alike in animals and in man. Shetland ponies bear greater inclemencies than the horses of the south, but are

dwarfed. Highland sheep and cattle, living in a colder climate, are stunted in comparison with English breeds. In both the arctic and antarctic regions the human race falls much below its ordinary height: the Laplander and Esquimaux are very short; and the Terra del Fuegians, who go naked in a wintry land, are described by Darwin as so stunted and hideous, that "one can hardly make one's-self believe they are fellow-creatures."

Science explains this dwarfishness produced by great abstraction of heat; showing that, food and other things being equal, it unavoidably results. For as before pointed out, to make up for that cooling by radiation which the body is ever undergoing, there must be a constant oxidation of certain matters forming part of the food. And in proportion as the thermal loss is great, must the quantity of these matters required for oxidation be great. But the power of the digestive organs is limited. Consequently, when they have to prepare a large quantity of this material needful for maintaining the temperature, they can prepare but a small quantity of the material which goes to build up the frame. Excessive expenditure for fuel entails diminished means for other purposes. Wherefore there necessarily results a body small in size, or inferior in texture, or both.

Hence the great importance of clothing. As Liebig says:—"Our clothing is, in reference to the temperature of the body, merely an equivalent for a certain amount of food." By diminishing the loss of heat, it diminishes the amount of fuel needful for maintaining the heat; and when the stomach has less to do in preparing fuel, it can do more in preparing other materials. This deduction is confirmed by the experience

of those who manage animals. Cold can be borne by animals only at an expense of fat, or muscle, or growth, as the case may be. "If fattening cattle are exposed to a low temperature, either their progress must be retarded or a great additional expenditure of food incurred."* Mr. Apperley insists strongly that, to bring hunters into good condition, it is necessary that the stable should be kept warm. And among those who rear racers, it is an established doctrine that exposure must be avoided.

The scientific truth thus illustrated by ethnology, and recognised by agriculturists and sportsmen, applies with double force to children. In proportion to their smallness and the rapidity of their growth is the injury from cold great. In France, new-born infants often die in winter from being carried to the office of the *maire* for registration. "M. Quetelet has pointed out, that in Belgium two infants die in January for one that dies in July." And in Russia the infant mortality is something enormous. Even when near maturity, the undeveloped frame is comparatively unable to bear exposure: as witness the quickness with which young soldiers succumb in a trying campaign. The *rationale* is obvious. We have already adverted to the fact that, in consequence of the varying relation between surface and bulk, a child loses a relatively larger amount of heat than an adult; and here we must point out that the disadvantage under which the child thus labours is very great. Lehmann says:—"If the carbonic acid excreted by children or young animals is calculated for an equal bodily weight, it results that children produce nearly twice as much acid as adults." Now the quantity of carbonic

acid given off varies with tolerable accuracy as the quantity of heat produced. And thus we see that in children the system, even when not placed at a disadvantage, is called upon to provide nearly double the proportion of material for generating heat.

See, then, the extreme folly of clothing the young scantily. What father, full-grown though he is, losing heat less rapidly as he does, and having no physiological necessity but to supply the waste of each day—what father, we ask, would think it salutary to go about with bare legs, bare arms, and bare neck? Yet this tax on the system, from which he would shrink, he inflicts on his little ones, who are so much less able to bear it! or, if he does not inflict it, sees it inflicted without protest. Let him remember that every ounce of nutriment needlessly expended for the maintenance of temperature, is so much deducted from the nutriment going to build up the frame; and that even when colds, congestions, or other consequent disorders are escaped, diminished growth or less perfect structure is inevitable.

"The rule is, therefore, not to dress in an invariable way in all cases, but to put on clothing in kind and quantity *sufficient in the individual case to protect the body effectually from an abiding sensation of cold, however slight.*" This rule, the importance of which Dr. Combe indicates by the italics, is one in which men of science and practitioners agree. We have met with none competent to form a judgment on the matter, who do not strongly condemn the exposure of children's limbs. If there is one point above others in which "pestilent custom" should be ignored, it is this.

Lamentable, indeed, is it to see mothers seriously damaging the constitutions of their children out of compliance with an

* Morton's *Cyclopædia of Agriculture*.

irrational fashion. It is bad enough that they should themselves conform to every folly which our Gallic neighbours please to initiate ; but that they should clothe their children in any mountebank dress which *Le petit Courrier des Dames* indicates, regardless of its insufficiency and unfitness, is monstrous. Discomfort, more or less great, is inflicted ; frequent disorders are entailed ; growth is checked or stamina undermined ; premature death not uncommonly caused ; and all because it is thought needful to make frocks of a size and material dictated by French caprice. Not only is it that for the sake of conformity, mothers thus punish and injure their little ones by scantiness of covering ; but it is that from an allied motive they impose a style of dress which forbids healthful activity. To please the eye, colours and fabrics are chosen totally unfit to bear that rough usage which unrestrained play involves : and then to prevent damage the unrestrained play is interdicted. "Get up this moment : you will soil your clean frock," is the mandate issued to some urchin creeping about on the floor. "Come back : you will dirty your stockings," calls out the governess to one of her charges, who has left the footpath to scramble up a bank. Thus is the evil doubled. That they may come up to their mamma's standard of prettiness, and be admired by her visitors, children must have habiliments deficient in quantity and unfit in texture ; and that these easily-damaged habiliments may be kept clean and uninjured, the restless activity so natural and needful for the young, is restrained. The exercise which becomes doubly requisite when the clothing is insufficient, is cut short, lest it should deface the clothing. Would that the terrible cruelty of this system could be seen by those who maintain it ! We do not hesitate to say that, through

enfeebled health, defective energies, and consequent non-success in life, thousands are annually doomed to unhappiness by this unscrupulous regard for appearances : even when they are not, by early death, literally sacrificed to the Moloch of maternal vanity. We are reluctant to counsel strong measures, but really the evils are so great as to justify, or even to demand, a peremptory interference on the part of fathers.

Our conclusions are, then—that, while the clothing of children should never be in such excess as to create oppressive warmth, it should always be sufficient to prevent any general feeling of cold ;* that instead of the flimsy cotton, linen, or mixed fabrics commonly used, it should be made of some good non-conductor, such as coarse woollen cloth ; that it should be so strong as to receive little damage from the hard wear and tear which childish sports will give it ; and that its colours should be such as will not soon suffer from use and exposure.

To the importance of bodily exercise most people are in some degree awake. Perhaps less needs saying on this requisite of physical education than on most others : at any rate, in so far as boys are concerned. Public schools and private schools alike furnish tolerably adequate playgrounds ; and there is usually a fair

* It is needful to remark that children whose legs and arms have been from the beginning habitually without covering, cease to be conscious that the exposed surfaces are cold ; just as by use we have all ceased to be conscious that our faces are cold, even when out of doors. But though in such children the sensations no longer protest, it does not follow that the system escapes injury ; any more than it follows that the Fuegian is undamaged by exposure, because he bears with indifference the melting of the falling snow on his naked body.

share of time for out-door games, and a recognition of them as needful. In this, if in no other direction, it seems admitted that the promptings of boyish instinct may advantageously be followed; and, indeed, in the modern practice of breaking the prolonged morning's and afternoon's lessons by a few minutes' open-air recreation, we see an increasing tendency to conform school-regulations to the bodily sensations of the pupils. Here, then, little need be said in the way of expostulation or suggestion.

But we have been obliged to qualify this admission by inserting the clause "in so far as boys are concerned." Unfortunately, the fact is quite otherwise with girls. It chanced, somewhat strangely, that we have daily opportunity of drawing a comparison. We have both a boys' school and a girls' school within view; and the contrast between them is remarkable. In the one case, nearly the whole of a large garden is turned into an open, gravelled space, affording ample scope for games, and supplied with poles and horizontal bars for gymnastic exercises. Every day before breakfast, again towards eleven o'clock, again at mid-day, again in the afternoon, and once more after school is over, the neighbourhood is awakened by a chorus of shouts and laughter as the boys rush out to play; and for as long as they remain, both eyes and ears give proof that they are absorbed in that enjoyable activity which makes the pulse bound and ensures the healthful activity of every organ. How unlike is the picture offered by the "Establishment for Young Ladies"! Until the fact was pointed out, we actually did not know that we had a girls' school as close to us as the school for boys. The garden, equally large with the other, affords no sign whatever of any provision for juvenile

recreation; but is entirely laid out with prim grass-plots, gravel-walks, shrubs, and flowers, after the usual suburban style. During five months we have not once had our attention drawn to the premises by a shout or a laugh. Occasionally girls may be observed sauntering along the paths with their lesson-books in their hands, or else walking arm-in-arm. Once, indeed, we saw one chase another round the garden; but, with this exception, nothing like vigorous exertion has been visible.

Why this astonishing difference? Is it that the constitution of a girl differs so entirely from that of a boy as not to need these active exercises? Is it that a girl has none of the promptings to vociferous play by which boys are impelled? Or is it that, while in boys these promptings are to be regarded as stimuli to a bodily activity without which there cannot be adequate development, to their sisters, Nature has given them for no purpose whatever—unless it be for the vexation of school-mistresses? Perhaps, however, we mistake the aim of those who train the gentler sex. We have a vague suspicion that to produce a robust *physique* is thought undesirable; that rude health and abundant vigour are considered somewhat plebeian; that a certain delicacy, a strength not competent to more than a mile or two's walk, an appetite fastidious and easily satisfied, joined with that timidity which commonly accompanies feebleness, are held more lady-like. We do not expect that any would distinctly avow this; but we fancy the governess-mind is haunted by an ideal young lady bearing not a little resemblance to this type. If so, it must be admitted that the established system is admirably calculated to realise this ideal. But to suppose that such is the ideal of the opposite sex is a profound

mistake. That men are not commonly drawn towards masculine women, is doubtless true. That such relative weakness as asks the protection of superior strength, is an element of attraction, we quite admit. But the difference thus responded to by the feelings of men, is the natural, pre-established difference, which will assert itself without artificial appliances. And when, by artificial appliances, the degree of this difference is increased, it becomes an element of repulsion rather than of attraction.

"Then girls should be allowed to run wild—to become as rude as boys, and grow up into romps and hoydens!" exclaims some defender of the proprieties. This, we presume, is the ever-present dread of school-mistresses. It appears, on inquiry, that at "Establishments for Young Ladies" noisy play like that daily indulged in by boys, is a punishable offence; and we infer that it is forbidden, lest unlady-like habits should be formed. The fear is quite groundless, however. For if the sportive activity allowed to boys does not prevent them from growing up into gentlemen; why should a like sportive activity prevent girls from growing up into ladies? Rough as may have been their playground frolics, youths who have left school do not indulge in leap-frog in the street, or marbles in the drawing-room. Abandoning their jackets, they abandon at the same time boyish games; and display an anxiety—often a ludicrous anxiety—to avoid whatever is not manly. If now, on arriving at the due age, this feeling of masculine dignity puts so efficient a restraint on the sports of boyhood, will not the feeling of feminine modesty, gradually strengthening as maturity is approached, put an efficient restraint on the like sports of girlhood?

Have not women even a greater regard for appearances than men? and will there not consequently arise in them even a stronger check to whatever is rough or boisterous? How absurd is the supposition that the womanly instincts would not assert themselves but for the rigorous discipline of school-mistresses!

In this, as in other cases, to remedy the evils of one artificiality, another artificiality has been introduced. The natural, spontaneous exercise having been forbidden, and the bad consequences of no exercise having become conspicuous, there has been adopted a system of factitious exercise—gymnastics. That this is better than nothing we admit; but that it is an adequate substitute for play we deny. The defects are both positive and negative. In the first place, these formal, muscular motions, necessarily less varied than those accompanying juvenile sports, do not secure so equable a distribution of action to all parts of the body; whence it results that the exertion, falling on special parts, produces fatigue sooner than it would else have done: to which, in passing, let us add, that if constantly repeated, this exertion of special parts leads to a disproportionate development. Again, the quantity of exercise thus taken will be deficient, not only in consequence of uneven distribution; but there will be a further deficiency in consequence of lack of interest. Even when not made repulsive, as they sometimes are, by assuming the shape of appointed lessons, these monotonous movements are sure to become wearisome from the absence of amusement. Competition, it is true, serves as a stimulus; but it is not a lasting stimulus, like that enjoyment which accompanies varied play. The weightiest objection, however, still remains. Besides being inferior in

respect of the *quantity* of muscular exertion which they secure, gymnastics are still more inferior in respect of the *quality*. This comparative want of enjoyment which we have named as a cause of early desistance from artificial exercises, is also a cause of inferiority in the effects they produce on the system. The common assumption that, so long as the amount of bodily action is the same, it matters not whether it be pleasurable or otherwise, is a grave mistake. An agreeable mental excitement has a highly invigorating influence. See the effect produced upon an invalid by good news, or by the visit of an old friend. Mark how careful medical men are to recommend lively society to debilitated patients. Remember how beneficial to health is the gratification produced by change of scene. The truth is that happiness is the most powerful of tonics. By accelerating the circulation of the blood, it facilitates the performance of every function; and so tends alike to increase health when it exists, and to restore it when it has been lost. Hence the intrinsic superiority of play to gymnastics. The extreme interest felt by children in their games, and the riotous glee with which they carry on their rougher frolics, are of as much importance as the accompanying exertion. And as not supplying these mental stimuli, gymnastics must be radically defective.

Granting then, as we do, that formal exercises of the limbs are better than nothing—granting, further, that they may be used with advantage as supplementary aids; we yet contend that they can never serve in place of the exercises prompted by Nature. For girls, as well as boys, the sportive activities to which the instincts impel, are essential to bodily welfare. Whoever forbids them, forbids

the divinely-appointed means to physical development.

A topic still remains—one perhaps more urgently demanding consideration than any of the foregoing. It is asserted by not a few, that among the educated classes the younger adults and those who are verging on maturity, are neither so well grown nor so strong as their seniors. On first hearing this assertion, we were inclined to class it as one of the many manifestations of the old tendency to exalt the past at the expense of the present. Calling to mind the facts that, as measured by ancient armour, modern men are proved to be larger than ancient men; and that the tables of mortality show no diminution, but rather an increase, in the duration of life; we paid little attention to what seemed a groundless belief. Detailed observation, however, has shaken our opinion. Omitting from the comparison the labouring classes, we have noticed a majority of cases in which the children do not reach the stature of their parents; and, in massiveness, making due allowance for difference of age, there seems a like inferiority. Medical men say that now-a-days people cannot bear nearly so much depletion as in times gone by. Premature baldness is far more common than it used to be. And an early decay of teeth occurs in the rising generation with startling frequency. In general vigour the contrast appears equally striking. Men of past generations, living riotously as they did, could bear more than men of the present generation, who live soberly, can bear. Though they drank hard, kept irregular hours, were regardless of fresh air, and thought little of cleanliness, our recent ancestors were capable of prolonged application without injury, even to a ripe old age: witness

the annals of the bench and the bar. Yet we who think much about our bodily welfare; who eat with moderation, and do not drink to excess; who attend to ventilation, and use frequent ablutions; who make annual excursions, and have the benefit of greater medical knowledge;—we are continually breaking down under our work. Paying considerable attention to the laws of health, we seem to be weaker than our grandfathers, who, in many respects, defied the laws of health. And, judging from the appearance and frequent ailments of the rising generation, they are likely to be even less robust than ourselves.

What is the meaning of this? Is it that past over-feeding, alike of adults and children, was less injurious than the under-feeding to which we have adverted as now so general? Is it that the deficient clothing which this delusive hardening-theory has encouraged, is to blame? Is it that the greater or less discouragement of juvenile sports, in deference to a false refinement, is the cause? From our reasonings it may be inferred that each of these has probably had a share in producing the evil.* But there has been yet another detrimental influence at work, perhaps more potent

than any of the others: we mean—excess of mental application.

On old and young, the pressure of modern life puts a still-increasing strain. In all businesses and professions, intenser competition taxes the energies and abilities of every adult; and to fit the young to hold their places under this intenser competition, they are subject to severer discipline than heretofore. The damage is thus doubled. Fathers, who find themselves run hard by their multiplying competitors, and, while labouring under this disadvantage, have to maintain a more expensive style of living, are all the year round obliged to work early and late, taking little exercise and getting but short holidays. The constitutions shaken by this continued over-application, they bequeath to their children. And then these comparatively feeble children, predisposed to break down even under ordinary strains on their energies, are required to go through a *curriculum* much more extended than that prescribed for the unenfeebled children of past generations.

The disastrous consequences that might be anticipated, are everywhere visible. Go where you will, and before long there come under your notice cases of children or youths, of either sex, more or less injured by undue study. Here, to recover from a state of debility thus produced, a year's rustication has been found necessary. There you find a chronic congestion of the brain, that has already lasted many months, and threatens to last much longer. Now you hear of a fever that resulted from the over-excitement in some way brought on at school. And again, the instance is that of a youth who has already had once to desist from his studies, and who, since his return to them, is frequently taken out of his class in a fainting fit.

* We are not certain that the propagation of subdued forms of constitutional disease through the agency of vaccination is not a part-cause. Sundry facts in pathology suggest the inference, that when the system of a vaccinated child is excreting the vaccine virus by means of pustules, it will tend also to excrete through such pustules other morbid matters; especially if these morbid matters are of a kind ordinarily got rid of by the skin, as are some of the worst of them. Hence it is very possible—probable even—that a child with a constitutional taint, too slight to show itself in visible disease, may, through the medium of vitiated vaccine lymph taken from it, convey a like constitutional taint to other children, and these to others.

We state facts—facts not sought for, but which have been thrust on our observation during the last two years; and that, too, within a very limited range. Nor have we by any means exhausted the list. Quite recently we had the opportunity of marking how the evil becomes hereditary: the case being that of a lady of robust parentage, whose system was so injured by the *régime* of a Scotch boarding-school, where she was underfed and over-worked, that she invariably suffers from vertigo on rising in the morning; and whose children, inheriting this enfeebled brain, are several of them unable to bear even a moderate amount of study without headache or giddiness. At the present time we have daily under our eyes a young lady whose system has been damaged for life by the college-course through which she has passed. Taxed as she was to such an extent that she had no energy left for exercise, she is, now that she has finished her education, a constant complainant. Appetite small and very capricious, mostly refusing meat; extremities perpetually cold, even when the weather is warm; a feebleness which forbids anything but the slowest walking, and that only for a short time; palpitation on going upstairs; greatly impaired vision—these, joined with checked growth and lax tissue, are among the results entailed. And to her case we may add that of her friend and fellow-student; who is similarly weak; who is liable to faint even under the excitement of a quiet party of friends; and who has at length been obliged by her medical attendant to desist from study entirely.

If injuries so conspicuous are thus frequent, how very general must be the smaller and inconspicuous injuries! To one case where positive illness is traceable to over-application, there are probably at least half-a-dozen cases where the evil

is unobtrusive and slowly accumulating—cases where there is frequent derangement of the functions, attributed to this or that special cause, or to constitutional delicacy; cases where there is retardation and premature arrest of bodily growth; cases where a latent tendency to consumption is brought out and established; cases where a predisposition is given to that now common cerebral disorder brought on by the labour of adult life. How commonly health is thus undermined, will be clear to all who, after noting the frequent ailments of hard-worked professional and mercantile men, will reflect on the much worse effects which undue application must produce on the undeveloped systems of children. The young can bear neither so much hardship, nor so much physical exertion, nor so much mental exertion, as the full grown. Judge then, if the full grown manifestly suffer from the excessive mental exertion required of them, how great must be the damage which a mental exertion, often equally excessive, inflicts on the young!

Indeed, when we examine the merciless school drill frequently enforced, the wonder is, not that it does extreme injury, but that it can be borne at all. Take the instance given by Sir John Forbes, from personal knowledge; and which he asserts, after much inquiry, to be an average sample of the middle-class girls'-school system throughout England. Omitting detailed divisions of time, we quote the summary of the twenty-four hours.

	hours
In bed	9
(the younger 10-hours)	
In school, at their studies and tasks . . .	9
In school, or in the house, the elder at optional studies or work, the younger at play	3½
(the younger 2½ hours)	

At meals	hours
Exercise in the open air, in the shape of a formal walk, often with lesson-books in hand, and even this only when the weather is fine at the appointed time ...	1½
	1
	24

And what are the results of this "astounding regimen," as Sir John Forbes terms it? Of course, feebleness, pallor, want of spirits, general ill-health. But he describes something more. This utter disregard of physical welfare, out of extreme anxiety to cultivate the mind—this prolonged exercise of brain and deficient exercise of limbs,—he found to be habitually followed, not only by disordered functions but by malformation. He says:—"We lately visited, in a large town, a boarding-school containing forty girls; and we learnt, on close and accurate inquiry, that there was *not one* of the girls who had been at the school two years (and the majority had been as long) that was not more or less *crooked*!"

It may be that since 1833, when this was written, some improvement has taken place. We hope it has. But that the system is still common—nay, that it is in some cases carried to a greater extreme than ever; we can personally testify. We recently went over a training-college for young men: one of those instituted of late years for the purpose of supplying schools with well-disciplined teachers. Here, under official supervision, where something better than the judgment of private school-mistresses might have been looked for, we found the daily routine to be as follows:—

At 6 o'clock the students are called,
7 to 8 studies,

At 8 to 9 scripture-reading, prayers, and breakfast,
,, 9 to 12 studies,
,, 12 to 1½ leisure, nominally devoted to walking or other exercise, but often spent in study,
,, 1½ to 2 dinner, the meal commonly occupying twenty-minutes,
,, 2 to 5 studies,
,, 5 to 6 tea and relaxation,
,, 6 to 8½ studies,
,, 8½ to 9½ private studies in preparing lessons for the next day,
,, 10 to bed.

Thus, out of the twenty-four hours, eight are devoted to sleep; four and a quarter are occupied in dressing, prayers, meals, and the brief periods of rest accompanying them; ten and a half are given to study; and one and a quarter to exercise, which is optional and often avoided. Not only, however, are the ten-and-a-half hours of recognised study frequently increased to eleven-and-a-half by devoting to books the time set apart for exercise; but some of the students get up at four o'clock in the morning to prepare their lessons; and are actually encouraged by their teachers to do this! The course to be passed through in a given time is so extensive; and the teachers, whose credit is at stake in getting their pupils well through the examinations, are so urgent; that pupils are not uncommonly induced to spend twelve and thirteen hours a day in mental labour!

It needs no prophet to see that the bodily injury inflicted must be great. As we were told by one of the inmates, those who arrive with fresh complexions quickly become blanched. Illness is frequent: there are always some on the sick-list. Failure of appetite and indigestion are very common. Diarrhoea is a prevalent disorder: not uncommonly a third of the whole number of students suffering under it at the same time.

headache is generally complained of ; and by some is borne almost daily for months. While a certain percentage down entirely and go away.

That this should be the regimen of what is in some sort a model institution, established and superintended by the embodied enlightenment of the age, is a startling fact. That the severe examinations, joined with the short period assigned for preparation, should compel recourse to a system which inevitably undermines the health of all who pass through it, is proof, if not of cruelty, then of woful ignorance.

The case is no doubt in a great degree exceptional—perhaps to be paralleled only in other institutions of the same class. But that cases so extreme should exist at all, goes far to show that the minds of the rising generation are greatly over-taxed. Expressing as they do the ideas of the educated community, the requirements of these training colleges, even in the absence of other evidence, would imply a prevailing tendency to an unduly urgent system of culture.

It seems strange that there should be so little consciousness of the dangers of over-education during youth, when there is so general a consciousness of the dangers of over-education during childhood. Most parents are partially aware of the evil consequences that follow infant-precocity. In every society may be heard reprobation of those who too early stimulate the minds of their little ones. And the dread of this early stimulation is great in proportion as there is adequate knowledge of the effects ; witness the implied opinion of one of our most distinguished professors of physiology, who told us that he did not intend his little boy to learn any lessons until he was eight years old. But while to all it is a familiar truth that a forced

development of intelligence in childhood, entails either physical feebleness, or ultimate stupidity, or early death ; it appears not to be perceived that throughout youth the same truth holds. Yet it unquestionably does so. There is a given order in which, and a given rate at which, the faculties unfold. If the course of education conforms itself to that order and rate, well. If not—if the higher faculties are early taxed by presenting an order of knowledge more complex and abstract than can be readily assimilated ; or if, by excess of culture, the intellect in general is developed to a degree beyond that which is natural to its age ; the abnormal advantage gained will inevitably be accompanied by some equivalent, or more than equivalent, evil.

For Nature is a strict accountant ; and if you demand of her in one direction more than she is prepared to lay out, she balances the account by making a deduction elsewhere. If you will let her follow her own course, taking care to supply, in right quantities and kinds, the raw materials of bodily and mental growth required at each age, she will eventually produce an individual more or less evenly developed. If, however, you insist on premature or undue growth of any one part, she will, with more or less protest, concede the point ; but that she may do your extra work, she must leave some of her more important work undone. Let it never be forgotten that the amount of vital energy which the body at any moment possesses, is limited ; and that, being limited, it is impossible to get from it more than a fixed quantity of results. In a child or youth the demands upon this vital energy are various and urgent. As before pointed out, the waste consequent on the day's bodily exercise has to be met ; the wear of brain entailed by the day's study has to be made good ;

a certain additional growth of body has to be provided for; and also a certain additional growth of brain: to which must be added the amount of energy absorbed in digesting the large quantity of food required for meeting these many demands. Now, that to divert an excess of energy into any one of these channels is to abstract it from the others, is both manifest *à priori*, and proved *à posteriori*, by the experience of every one. Every one knows, for instance, that the digestion of a heavy meal makes such a demand on the system as to produce lassitude of mind and body, frequently ending in sleep. Every one knows, too, that excess of bodily exercise diminishes the power of thought—that the temporary prostration following any sudden exertion, or the fatigue produced by a thirty miles' walk, is accompanied by a disinclination to mental effort; that, after a month's pedestrian tour, the mental inertia is such that some days are required to overcome it; and that in peasants who spend their lives in muscular labour the activity of mind is very small. Again, it is a familiar truth that during those fits of rapid growth which sometimes occur in childhood, the great abstraction of energy is shown in an attendant prostration, bodily and mental. Once more, the facts that violent muscular exertion after eating, will stop digestion; and that children who are early put to hard labour become stunted; similarly exhibit the antagonism—similarly imply that excess of activity in one direction involves deficiency of it in other directions. Now, the law which is thus manifest in extreme cases, holds in all cases. These injurious abstractions of energy as certainly take place when the undue demands are slight and constant, as when they are great and sudden. Hence, if during youth the expenditure

in mental labour exceeds that which Nature has provided for; the expenditure for other purposes falls below what it should have been; and evils of one kind or other are inevitably entailed. Let us briefly consider these evils.

Supposing the over-activity of brain to exceed the normal activity only in a moderate degree, there will be nothing more than some slight reaction on the development of the body: the stature falling a little below that which it would else have reached; or the bulk being less than it would have been; or the quality of tissue not being so good. One or more of these effects must necessarily occur. The extra quantity of blood supplied to the brain during mental exertion, and during the subsequent period in which the waste of cerebral substance is being made good, is blood that would else have been circulating through the limbs and viscera; and the growth or repair for which that blood would have supplied materials, is lost. This physical reaction being certain, the question is, whether the gain resulting from the extra culture is equivalent to the loss?—whether defect of bodily growth, or the want of that structural perfection which gives vigour and endurance, is compensated by the additional knowledge acquired?

When the excess of mental exertion is greater, there follow results far more serious; telling not only against bodily perfection, but against the perfection of the brain itself. It is a physiological law, first pointed out by M. Isidor St. Hilaire, and to which attention has been drawn by Mr. Lewes in his essay on "Dwarfs and Giants," that there is an antagonism between *growth* and *development*. By growth, as used in this antithetical sense, is to be understood *increase of size*; by development, *increase*

of structure. And the law is, that great activity in either of these processes involves retardation or arrest of the other. A familiar example is furnished by the cases of the caterpillar and the chrysalis. In the caterpillar there is extremely rapid augmentation of bulk ; but the structure is scarcely at all more complex when the caterpillar is full-grown than when it is small. In the chrysalis the bulk does not increase ; on the contrary, weight is lost during this stage of the creature's life ; but the elaboration of a more complex structure goes on with great activity. The antagonism, here so clear, is less traceable in higher creatures, because the two processes are carried on together. But we see it pretty well illustrated among ourselves when we contrast the sexes. A girl develops in body and mind rapidly, and ceases to grow comparatively early. A boy's bodily and mental development is slower, and his growth greater. At the age when the one is mature, finished, and having all faculties in full play, the other, whose vital energies have been more directed towards increase of size, is relatively incomplete in structure ; and shows it in a comparative awkwardness, bodily and mental. Now this law is true of each separate part of the organism, as well as of the whole. The abnormally rapid advance of any organ in respect of structure, involves premature arrest of its growth ; and this happens with the organ of the mind as certainly as with any other organ. The brain, which during early years is relatively large in mass but imperfect in structure, will, if required to perform its functions with undue activity, undergo a structural advance greater than is appropriate to its age ; but the ultimate effect will be a falling short of the size and power that would else have been attained. And this is a part-cause—

probably the chief cause—why precocious children, and youths who up to a certain time were carrying all before them, so often stop short and disappoint the high hopes of their parents.

But these results of over-education, disastrous as they are, are perhaps less disastrous than the effects produced on the health—the undermined constitution, the enfeebled energies, the morbid feelings. Recent discoveries in physiology have shown how immense is the influence of the brain over the functions of the body. Digestion, circulation, and through these all the organic processes, are profoundly affected by cerebral excitement. Whoever has seen repeated, as we have, the experiment first performed by Weber, showing the consequence of irritating the *vagus* nerve, which connects the brain with the viscera—whoever has seen the action of the heart suddenly arrested by irritating this nerve ; slowly recommencing when the irritation is suspended ; and again arrested the moment it is renewed ; will have a vivid conception of the depressing influence which an overwrought brain exercises on the body. The effects thus physiologically explained, are indeed exemplified in ordinary experience. There is no one but has felt the palpitation accompanying hope, fear, anger, joy—no one but has observed how laboured becomes the action of the heart when these feelings are violent. And though there are many who have never suffered that extreme emotional excitement which is followed by arrest of the heart's action and fainting ; yet every one knows these to be cause and effect. It is a familiar fact, too, that disturbance of the stomach results from mental excitement exceeding a certain intensity. Loss of appetite is a common consequence alike of very pleasurable and very painful states of

mind. When the event producing a pleasurable or painful state of mind occurs shortly after a meal, it not unfrequently happens either that the stomach rejects what has been eaten, or digests it with great difficulty and under protest. And as every one who taxes his brain much can testify, even purely intellectual action will, when excessive, produce analogous effects. Now the relation between brain and body which is so manifest in these extreme cases, holds equally in ordinary, less-marked cases. Just as these violent but temporary cerebral excitements produce violent but temporary disturbances of the viscera; so do the less violent but chronic cerebral excitements produce less violent but chronic visceral disturbances. This is not simply an inference:—it is a truth to which every medical man can bear witness; and it is one to which a long and sad experience enables us to give personal testimony. Various degrees and forms of bodily derangement, often taking years of enforced idleness to set partially right, result from this prolonged over-exertion of mind. Sometimes the heart is chiefly affected: habitual palpitations; a pulse much enfeebled; and very generally a diminution in the number of beats from seventy-two to sixty, or even fewer. Sometimes the conspicuous disorder is of the stomach: a dyspepsia which makes life a burden, and is amenable to no remedy but time. In many cases both heart and stomach are implicated. Mostly the sleep is short and broken. And very generally there is more or less mental depression.

Consider, then, how great must be the damage inflicted by undue mental excitement on children and youths. More or less of this constitutional disturbance will inevitably follow an exertion of brain beyond the normal amount; and when not

so excessive as to produce absolute illness, is sure to entail a slowly accumulating degeneracy of *physique*. With a small and fastidious appetite, an imperfect digestion, and an enfeebled circulation, how can the developing body flourish? The due performance of every vital process depends on an adequate supply of good blood. Without enough good blood, no gland can secrete properly, no viscus can fully discharge its office. Without enough good blood, no nerve, muscle, membrane, or other tissue can be efficiently repaired. Without enough good blood, growth will be neither sound nor sufficient. Judge, then, how bad must be the consequences when to a growing body the weakened stomach supplies blood that is deficient in quantity and poor in quality; while the debilitated heart propels this poor and scanty blood with unnatural slowness.

And if, as all who investigate the matter must admit, physical degeneracy is a consequence of excessive study, how grave is the condemnation to be passed on this cramming-system above exemplified. It is a terrible mistake, from whatever point of view regarded. It is a mistake in so far as the mere acquirement of knowledge is concerned. For the mind, like the body, cannot assimilate beyond a certain rate; and if you ply it with facts faster than it can assimilate them, they are soon rejected again: instead of being built into the intellectual fabric, they fall out of recollection after the passing of the examination for which they were got up. It is a mistake, too, because it tends to make study distasteful. Either through the painful associations produced by ceaseless mental toil, or through the abnormal state of brain it leaves behind, it often generates an aversion to books; and, instead of that subsequent self-culture induced by

rational education, there comes continued retrogression. It is a mistake, also, inasmuch as it assumes that the acquisition of knowledge is everything; and forgets that a much more important thing is the organisation of knowledge, for which time and spontaneous thinking are requisite. As Humboldt remarks respecting the progress of intelligence in general, that "the interpretation of Nature is obscured when the description languishes under too great an accumulation of insulated facts"; so, it may be remarked respecting the progress of individual intelligence, that the mind is overburdened and hampered by an excess of ill-digested information. It is not the knowledge stored up as intellectual fat which is of value; but that which is turned into intellectual muscle. The mistake goes still deeper however. Even were the system good as producing intellectual efficiency, which it is not; it would still be bad, because, as we have shown, it is fatal to that vigour of *physique* needful to make intellectual training available in the struggle of life. Those who, in eagerness to cultivate their pupils' minds, are reckless of their bodies, do not remember that success in the world depends more on energy than on information; and that a policy which in cramming with information undermines energy, is self-defeating. The strong will and untiring activity due to abundant animal vigour, go far to compensate even great defects of education; and when joined with that quite adequate education which may be obtained without sacrificing health, they ensure an easy victory over competitors enfeebled by excessive study: prodigies of learning though they may be. A comparatively small and ill-made engine, worked at high pressure, will do more than a large and well-finished one worked at low pressure. What folly is

it, then, while finishing the engine, so to damage the boiler that it will not generate steam! Once more, the system is a mistake, as involving a false estimate of welfare in life. Even supposing it were a means to worldly success, instead of a means to worldly failure, yet, in the entailed ill-health, it would inflict a more than equivalent curse. What boots it to have attained wealth, if the wealth is accompanied by ceaseless ailments? What is the worth of distinction, if it has brought hypochondria with it? Surely no one needs telling that a good digestion, a bounding pulse, and high spirits, are elements of happiness which no external advantages can out-balance. Chronic bodily disorder casts a gloom over the brightest prospects; while the vivacity of strong health gilds even misfortune. We contend, then, that this over-education is vicious in every way—vicious, as giving knowledge that will soon be forgotten; vicious, as producing a disgust for knowledge; vicious, as neglecting that organisation of knowledge which is more important than its acquisition; vicious, as weakening or destroying that energy without which a trained intellect is useless; vicious, as entailing that ill-health for which even success would not compensate, and which makes failure doubly bitter.

On women the effects of this forcing system are, if possible, even more injurious than on men. Being in great measure debarred from those vigorous and enjoyable exercises of body by which boys mitigate the evils of excessive study, girls feel these evils in their full intensity. Hence, the much smaller proportion of them who grow up well-made and healthy. In the pale, angular, flat-chested young ladies, so abundant in London drawing-rooms, we see the effect of merciless application, unrelieved by youthful sports;

and this physical degeneracy hinders their welfare far more than their many accomplishments aid it. Mamma anxious to make their daughters attractive, could scarcely choose a course more fatal than this, which sacrifices the body to the mind. Either they disregard the tastes of the opposite sex, or else their conception of those tastes is erroneous. Men care little for erudition in women; but very much for physical beauty, good nature, and sound sense. How many conquests does the blue-stocking make through her extensive knowledge of history? What man ever fell in love with a woman because she understood Italian? Where is the Edwin who was brought to Angelina's feet by her German? But rosy cheeks and laughing eyes are great attractions. A finely-rounded figure draws admiring glances. The liveliness and good humour that overflowing health produces, go a great way towards establishing attachments. Every one knows cases where bodily perfections, in the absence of all other recommendations, have incited a passion that carried all before it; but scarcely any one can point to a case where intellectual acquirements, apart from moral or physical attributes, have aroused such a feeling. The truth is, that out of the many elements uniting in various proportions to produce in a man's breast the complex emotion we call love, the strongest are those produced by physical attractions; the next in order of strength are those produced by moral attractions; the weakest are those produced by intellectual attractions; and even these are dependent less on acquired knowledge than on natural faculty—quickness, wit, insight. If any think the assertion a derogatory one, and inveigh against the masculine character for being thus swayed; we reply that they little know what they say when they thus call

in question the Divine ordinations. Even were there no obvious meaning in the arrangement, we might be sure that some important end was subserved. But the meaning is quite obvious to those who examine. When we remember that one of Nature's ends, or rather her supreme end, is the welfare of posterity; further that, in so far as posterity are concerned, a cultivated intelligence based on a bad *physique* is of little worth, since its descendants will die out in a generation or two; and conversely that a good *physique*, however poor the accompanying mental endowments, is worth preserving, because, throughout future generations, the mental endowments may be indefinitely developed; we perceive how important is the balance of instincts above described. But, advantage apart, the instincts being thus balanced, it is folly to persist in a system which undermines a girl's constitution that it may overload her memory. Educate as highly as possible—the higher the better—provided no bodily injury is entailed (and we may remark, in passing, that a sufficiently high standard might be reached were the parrot-faculty cultivated less, and the human faculty more, and were the discipline extended over that now wasted period between leaving school and being married). But to educate in such manner, or to such extent, as to produce physical degeneracy, is to defeat the chief end for which the toil and cost and anxiety are submitted to. By subjecting their daughters to this high-pressure system, parents frequently ruin their prospects in life. Besides inflicting on them enfeebled health, with all its pains and disabilities and gloom; they not unfrequently doom them to celibacy.

The physical education of children is thus, in various ways, seriously faulty. It errs in deficient feeding; in deficient

clothing; in deficient exercise (among girls at least); and in excessive mental application. Considering the *régime* as a whole, its tendency is too exacting: it asks too much and gives too little. In the extent to which it taxes the vital energies, it makes the juvenile life far more like the adult life than it should be. It overlooks the truth that, as in the foetus the entire vitality is expended in growth—as in the infant, the expenditure of vitality in growth is so great as to leave extremely little for either physical or mental action; so throughout childhood and youth, growth is the dominant requirement to which all others must be subordinated: a requirement which dictates the giving of much and the taking away of little—a requirement which, therefore, restricts the exertion of body and mind in proportion to the rapidity of growth—a requirement which permits the mental and physical activities to increase only as fast as the rate of growth diminishes.

The *rationale* of this high-pressure education is that it results from our passing phase of civilisation. In primitive times, when aggression and defence were the leading social activities, bodily vigour with its accompanying courage were the desiderata; and then education was almost wholly physical: mental cultivation was little cared for, and indeed, as in feudal ages, was often treated with contempt. But now that our state is relatively peaceful—now that muscular power is of use for little else than manual labour, while social success of nearly every kind

depends very much on mental power; our education has become almost exclusively mental. Instead of respecting the body and ignoring the mind, we now respect the mind and ignore the body. Both these attitudes are wrong. We do not yet realise the truth that as, in this life of ours, the physical underlies the mental, the mental must not be developed at the expense of the physical. The ancient and modern conceptions must be combined.

Perhaps nothing will so much hasten the time when body and mind will both be adequately cared for, as a diffusion of the belief that the preservation of health is a *duty*. Few seem conscious that there is such a thing as physical morality. Men's habitual words and acts imply the idea that they are at liberty to treat their bodies as they please. Disorders entailed by disobedience to Nature's dictates, they regard simply as grievances: not as the effects of a conduct more or less flagitious. Though the evil consequences inflicted on their dependents, and on future generations, are often as great as those caused by crime; yet they do not think themselves in any degree criminal. It is true that, in the case of drunkenness, the viciousness of a bodily transgression is recognised: but none appear to infer that, if this bodily transgression is vicious, so too is every bodily transgression. The fact is, that all breaches of the laws of health are *physical sins*. When this is generally seen, then, and perhaps not till then, will the physical training of the young receive the attention it deserves.

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AUTOBIOGRAPHY

I was born about eight o'clock in the morning on the 4th of May, 1825, at Ealing, which was, at that time, as quiet a little country village as could be found within half-a-dozen miles of Hyde Park Corner. Now it is a suburb of London with, I believe, 30,000 inhabitants. My father was one of the masters in a large semi-public school which at one time had a high reputation. I am not aware that any portents preceded my arrival in this world, but, in my childhood, I remember hearing a traditional account of the manner in which I lost the chance of an endowment of great practical value. The windows of my mother's room were open, in consequence of the unusual warmth of the weather. For the same reason, probably, a neighbouring beehive had swarmed, and the new colony, pitching on the window-sill, was making its way into the room when the horrified nurse shut down the sash. If that well-meaning woman had only abstained from her ill-timed interference, the swarm might have settled on my lips, and I should have been endowed with that mellifluous eloquence which, in this country, leads far more surely than worth, capacity, or honest work, to the highest places in Church and State. But the opportunity was lost, and I have been obliged to content myself through life with saying what I mean in the plainest of plain language, than which, I suppose, there is no habit more ruinous to a man's prospects of advancement.

Why I was christened Thomas Henry

I do not know; but it is a curio-
sity that my parents should
my usual denomination upon
of that particular Apostle with
have always felt most sympathy.
cally and mentally I am the son of my
mother so completely—even down to
peculiar movements of the hands, which
made their appearance in me as I reached
the age she had when I noticed them—
that I can hardly find any trace of my
father in myself, except an inborn faculty
for drawing, which unfortunately, in my
case, has never been cultivated, a hot
temper, and that amount of tenacity of
purpose which unfriendly observers some-
times call obstinacy.

My mother was a slender brunette, of
an emotional and energetic temperament,
and possessed of the most piercing black
eyes I ever saw in a woman's head. With
no more education than other women of
the middle classes in her day, she had an
excellent mental capacity. Her most
distinguishing characteristic, however,
was rapidity of thought. If one ven-
tured to suggest she had not taken
much time to arrive at any conclusion,
she would say, "I cannot help it, things
flash across me." That peculiarity has
been passed on to me in full strength;
it has often stood me in good stead; it
has sometimes played me sad tricks, and
it has always been a danger. But, after
all, if my time were to come over again,
there is nothing I would less willingly
part with than my inheritance of mother
wit.

I have next to nothing to say about

my childhood. In later years my mother, looking at me almost reproachfully, would sometimes say, "Ah! you were such a boy!" whence I had no difficulty in concluding that I had not fully early promise in the matter of fact, I have a distinct recollection of certain curls of which I was conscious of a conviction that I closely resembled that handsome, courtly gentleman, Sir Herbert Oakley, who was vicar of our parish, and who was as a god to the country folk, because he was occasionally visited by the then Prince George of Cambridge. I remember turning my snaffle wrong side forwards in order to represent a surplice, and preaching to my mother's maids in the kitchen as nearly as possible in Sir Herbert's manner one Sunday morning when the rest of the family were at church. That is the earliest indication I can call to mind of the strong clerical affinities which my friend Mr. Herbert Spencer has always ascribed to me, though I fancy they have for the most part remained in a latent state.

My regular school training was of the briefest, perhaps fortunately, for though my way of life has made me acquainted with all sorts and conditions of men, from the highest to the lowest, I deliberately affirm that the society I fell into at school was the worst I have ever known. We boys were average lads, with much the same inherent capacity for good and evil as any others; but the people who were set over us cared about as much for our intellectual and moral welfare as if they were baby-farmers. We were left to the operation of the struggle for existence among ourselves, and bullying was the least of the ill practices current among us. Almost the only cheerful reminiscence in connection with

the place which arises in my mind is that of a battle I had with one of my classmates, who had bullied me until I could stand it no longer. I was a very slight lad, but there was a wild-cat element in me which, when roused, made up for lack of weight, and I licked my adversary effectually. However, one of my first experiences of the extremely rough-and-ready nature of justice, as exhibited by the course of things in general, arose out of the fact that I—the victor—had a black eye, while he—the vanquished—had none, so that I got into disgrace and he did not. We made it up, and thereafter I was unmolested. One of the greatest shocks I ever received in my life was to be told a dozen years afterwards by the groom who brought me my horse in a stable-yard in Sydney that he was my quondam antagonist. He had a long story of family misfortune to account for his position, but at that time it was necessary to deal very cautiously with mysterious strangers in New South Wales, and on inquiry I found that the unfortunate young man had not only been "sent out," but had undergone more than one colonial conviction.

As I grew older, my great desire was to be a mechanical engineer, but the fates were against this, and, while very young, I commenced the study of medicine under a medical brother-in-law. But, though the Institute of Mechanical Engineers would certainly not own me, I am not sure that I have not all along been a sort of mechanical engineer *in partibus infidelium*. I am now occasionally horrified to think how very little I ever knew or cared about medicine as the art of healing. The only part of my professional course which really and deeply interested me was physiology,

which is the mechanical engineering of living machines; and, notwithstanding that natural science has been my proper business, I am afraid there is very little of the genuine naturalist in me. I never collected anything, and species work was always a burden to me; what I cared for was the architectural and engineering part of the business, the working out the wonderful unity of plan in the thousands and thousands of diverse living constructions, and the modifications of similar apparatuses to serve diverse ends. The extraordinary attraction I felt towards the study of the intricacies of living structure nearly proved fatal to me at the outset. I was a mere boy—I think between thirteen and fourteen years of age—when I was taken by some older student friends of mine to the first *post-mortem* examination I ever attended. All my life I have been most unfortunately sensitive to the disagreeables which attend anatomical pursuits, but on this occasion my curiosity overpowered all other feelings, and I spent two or three hours in gratifying it. I did not cut myself, and none of the ordinary symptoms of dissection-poison supervened, but poisoned I was somehow, and I remember sinking into a strange state of apathy. By way of a last chance, I was sent to the care of some good, kind people, friends of my father's, who lived in a farmhouse in the heart of Warwickshire. I remember staggering from my bed to the window on the bright spring morning after my arrival, and throwing open the casement. Life seemed to come back on the wings of the breeze, and to this day the faint odour of wood-smoke, like that which floated across the farm-yard in the early morning, is as good to me as the "sweet south upon a bed of violets." I soon recovered,

but for years I suffered from occasional paroxysms of internal pain, and from that time my constant friend, hypochondriacal dyspepsia, commenced his half century of co-tenancy of my fleshly tabernacle.

Looking back on my "Lehrjahre," am sorry to say that I do not think that any account of my doings as a student would tend to edification. In fact, I should distinctly warn ingenuous youth to avoid imitating my example. I worked extremely hard when it pleased me, and when it did not—which was a very frequent case—I was extremely idle (unless making caricatures of one's pastors and masters is to be called a branch of industry), or else wasted my energies in wrong directions. I read everything I could lay hands upon, including novels, and took up all sorts of pursuits to drop them again quite as speedily. No doubt it was very largely my own fault, but the only instruction from which I ever obtained the proper effect of education was that which I received from Mr. Wharton Jones, who was the lecturer on physiology at the Charing Cross School of Medicine. The extent and precision of his knowledge impressed me greatly, and the severe exactness of his method of lecturing was quite to my taste. I do not know that I have ever felt so much respect for anybody as a teacher before or since. I worked hard to obtain his approbation, and he was extremely kind and helpful to the youngster who, I am afraid, took up more of his time than he had any right to do. It was he who suggested the publication of my first scientific paper—a very little one—in the *Medical Gazette* of 1845, and most kindly corrected the literary faults which abounded in it, short as it was; for at that time, and for many years afterwards,

I detested the trouble of writing, and would take no pains over it.

It was in the early spring of 1846, that having finished my obligatory medical studies and passed the first M.B. examination at the London University—though I was still too young to qualify at the College of Surgeons—I was talking to a fellow-student (the present eminent physician, Sir Joseph Fayrer), and wondering what I should do to meet the imperative necessity for earning my own bread, when my friend suggested that I should write to Sir William Burnett, at that time Director-General for the Medical Service of the Navy, for an appointment. I thought this rather a strong thing to do, as Sir William was personally unknown to me, but my cheery friend would not listen to my scruples, so I went to my lodgings and wrote the best letter I could devise. A few days afterwards I received the usual official circular of acknowledgment, but at the bottom there was written an instruction to call at Somerset House on such a day. I thought that looked like business, so at the appointed time I called and sent in my card, while I waited in Sir William's ante-room. He was a tall, shrewd-looking old gentleman, with a broad Scotch accent—and I think I see him now as he entered with my card in his hand. The first thing he did was to return it, with the frugal reminder that I should probably find it useful on some other occasion. The second was to ask whether I was an Irishman. I suppose the air of modesty about my appeal must have struck him. I satisfied the Director-General that I was English to the backbone, and he made some inquiries as to my student career, finally desiring me to hold myself ready for examination. Having passed this, I was

in Her Majesty's Service, and entered on the books of Nelson's old ship, the *Victory*, for duty at Haslar Hospital, about a couple of months after I made my application.

My official chief at Haslar was a very remarkable person, the late Sir John Richardson, an excellent naturalist, and far-famed as an indomitable Arctic traveller. He was a silent, reserved man, outside the circle of his family and intimates; and, having a full share of youthful vanity, I was extremely disgusted to find that "Old John," as we irreverent youngsters called him, took not the slightest notice of my worshipful self either the first time I attended him, as it was my duty to do, or for some weeks afterwards. I am afraid to think of the lengths to which my tongue may have run on the subject of the churlishness of the chief, who was, in truth, one of the kindest-hearted and most considerate of men. But one day, as I was crossing the hospital square, Sir John stopped me, and heaped coals of fire on my head by telling me that he had tried to get me one of the resident appointments, much coveted by the assistant-surgeons, but that the Admiralty had put in another man. "However," said he, "I mean to keep you here till I can get you something you will like," and turned upon his heel without waiting for the thanks I stammered out. That explained how it was I had not been packed off to the West Coast of Africa like some of my juniors, and why, eventually, I remained altogether seven months at Haslar.

After a long interval, during which "Old John" ignored my existence almost as completely as before, he stopped me again as we met in a casual way, and describing the service on which the

Rattlesnake was likely to be employed, said that Captain Owen Stanley, who was to command the ship, had asked him to recommend an assistant surgeon who knew something of science; would I like that? Of course I jumped at the offer. "Very well, I give you leave; go to London at once and see Captain Stanley." I went, saw my future commander, who was very civil to me, and promised to ask that I should be appointed to his ship, as in due time I was. It is a singular thing that, during the few months of my stay at Haslar, I had among my messmates two future Directors-General of the Medical Service of the Navy (Sir Alexander Armstrong and Sir John Watt-Reid), with the present President of the College of Physicians and my kindest of doctors, Sir Andrew Clark.

Life on-board Her Majesty's ships in those days was a very different affair from what it is now, and ours was exceptionally rough, as we were often many months without receiving letters or seeing any civilised people but ourselves. In exchange, we had the interest of being about the last voyagers, I suppose, to whom it could be possible to meet with people who knew nothing of fire-arms—as we did on the south Coast of New Guinea—and of making acquaintance with a variety of interesting savage and semi-civilised people. But, apart from experience of this kind and the opportunities offered for scientific work, to me, personally, the cruise was extremely valuable. It was good for me to live under sharp discipline; to be down on the realities of existence by living on bare necessities; to find out how extremely well worth living life seemed to be when one woke up from a night's rest on a soft plank, with the sky for

canopy and cocoa and weevilly biscuit the sole prospect for breakfast; and, more especially, to learn to work for the sake of what I got for myself out of it, even if it all went to the bottom and I along with it. My brother officers were as good fellows as sailors ought to be and generally are, but, naturally, they neither knew nor cared anything about my pursuits, nor understood why I should be so zealous in pursuit of the objects which my friends, the middies, christened "*Buffons*," after the title conspicuous on a volume of the "*Suites à Buffon*," which stood on my shelf in the chart room.

During the four years of our absence, I sent home communication after communication to the "*Linnean Society*," with the same result as that obtained by Noah when he sent the raven out of his ark. Tired at last of hearing nothing about them, I determined to do or die, and in 1849 I drew up a more elaborate paper and forwarded it to the Royal Society. This was my dove, if I had only known it. But owing to the movements of the ship, I heard nothing of that either until my return to England in the latter end of the year 1850, when I found that it was printed and published, and that a huge packet of separate copies awaited me. When I hear some of my young friends complain of want of sympathy and encouragement, I am inclined to think that my naval life was not the least valuable part of my education.

Three years after my return were occupied by a battle between my scientific friends on the one hand and the Admiralty on the other, as to whether the latter ought, or ought not, to act up to the spirit of a pledge they had given to encourage officers who had done

scientific work by contributing to the expense of publishing mine. At last the Admiralty, getting tired, I suppose, but short the discussion by ordering me to join a ship, which thing I declined to do, and as Rastignac, in the "Père Goriot," says to Paris, I said to London, "*à nous deux.*" I desired to obtain a Professorship of either Physiology or Comparative Anatomy, and as vacancies occurred I applied, but in vain. My friend, Professor Tyndall, and I were candidates at the same time, he for the Chair of Physics and I for that of Natural History in the University of Toronto, which, fortunately, as it turned out, would not look at either of us. I say fortunately, not from any lack of respect for Toronto, but because I soon made up my mind that London was the place for me, and hence I have steadily declined the inducements to leave it, which have at various times been offered. At last, in 1854, on the translation of my warm friend Edward Forbes, to Edinburgh, Sir Henry De la Beche, the Director-General of the Geological Survey, offered me the post Forbes vacated of Paleontologist and Lecturer on Natural History. I refused the former point blank, and accepted the latter only provisionally, telling Sir Henry that I did not care for fossils, and that I should give up Natural History as soon as I could get a physiological post. But I held the office for thirty-one years, and a large part of my work has been paleontological.

At that time I disliked public speaking, and had a firm conviction that I should break down every time I opened my mouth. I believe I had every fault a speaker could have (except talking at random or indulging in rhetoric), when I spoke to the first important audience

I ever addressed, on a Friday evening at the Royal Institution, in 1852. Yet I must confess to having been guilty *malgré moi*, of as much public speaking as most of my contemporaries, and for the last ten years it ceased to be as much of a bugbear to me. I used to pity myself for having to go through this training, but I am now more disposed to compassionate the unfortunate audiences, especially my ever-friendly hearers at the Royal Institution, who were the subjects of my oratorical experiments.

The last thing that it would be proper for me to do would be to speak of the work of my life, or to say at the end of the day whether I think I have earned my wages or not. Men are said to be partial judges of themselves. Young men may be, I doubt if old men are. Life seems terribly foreshortened as they look back, and the mountain they set themselves to climb in youth turns out to be a mere spur of immeasurable higher ranges when, with failing breath they reach the top. But if I may speak of the objects I have had more or less definitely in view since I began the ascent of my hillock, they are briefly these: To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction which has grown with my growth and strengthened with my strength, that there is no alleviation for the suffering of mankind except veracity of thought and of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its uglier features is stripped off.

It is with this intent that I have subordinated any reasonable, or any

able, ambition for scientific fame which I may have permitted myself to exert to other ends; to the popularisation of science; to the development and organisation of scientific education; to the endless series of battles and skirmishes over evolution; and to untiring opposition to that ecclesiastical spirit, that clericalism, which in England, as everywhere else, and to whatever denomination it may belong, is the deadly enemy of science.

In striving for the attainment of these objects, I have been but one among many, and I shall be well content to be remembered, or even not remembered, as such. Circumstances, among which

I am proud to reckon the devoted kindness of many friends, have led to my occupation of various prominent positions, among which the Presidency of the Royal Society is the highest. It would be mock modesty on my part, with these and other scientific honours which have been bestowed upon me, to pretend that I have not succeeded in the career which I have followed, rather because I was driven into it than of my own free will; but I am afraid I should not count even these things as marks of success if I could not hope that I had somewhat helped that movement of opinion which has been called the New Reformation.

LECTURES AND ESSAYS

LECTURES ON EVOLUTION

[NEW YORK; 1876]

I

THE THREE HYPOTHESES RESPECTING THE HISTORY OF NATURE

We live in and form part of a system of things of immense diversity and perplexity, which we call Nature; and it is a matter of the deepest interest to all of us that we should form just conceptions of the constitution of that system and of its past history. With relation to this universe, man is, in extent, little more than a mathematical point; in duration but a fleeting shadow; he is a mere reed shaken in the winds of force. But as Pascal long ago remarked, although a mere reed, he is a thinking reed, and in virtue of that wonderful

capacity of thought, he has the power of framing for himself a symbolic conception of the universe, which, although doubtless highly imperfect and inadequate as a picture of the great whole, is yet sufficient to serve him as a chart for the guidance of his practical affairs. It has taken long ages of toilsome and often fruitless labour to enable man to look steadily at the shifting scenes of the phantasmagoria of Nature, to notice what is fixed among her fluctuations, and what is regular among her apparent irregularities; and it is only comparatively lately, within the last few centuries, that the conception of a universal order and of a definite course of things, which we term the course of Nature, has emerged.

But, once originated, the conception of the constancy of the order of Nature has become the dominant idea of modern thought. To any person who is familiar with the facts upon which that conception is based, and is competent to estimate their significance, it has ceased to be conceivable that chance should have any place in the universe, or that events should depend upon any but the natural sequence of cause and effect. We have come to look upon the present as the child of the past and as the parent of the future; and, as we have excluded chance from a place in the universe, so we ignore, even as a possibility, the notion of any interference with the order of Nature. Whatever may be men's speculative doctrines, it is quite certain that every intelligent person guides his life and risks his fortune upon the belief that the order of Nature is constant, and that the chain of natural causation is never broken.

In fact, no belief which we entertain has so complete a logical basis as that to which I have just referred. It tacitly underlies every process of reasoning; it is the foundation of every act of the will. It is based upon the broadest induction, and it is verified by the most constant, regular, and universal of deductive processes. But we must recollect that any human belief, however broad its basis, however defensible it may seem, is, after all, only a probable belief, and that our widest and safest generalisations are simply statements of the highest degree of probability. Though we are quite clear about the constancy of the order of Nature, at the present time, and in the present state of things, it by no means necessarily follows that we are justified in expanding this generalisation into the infinite past, and in denying, absolutely, that there may have been a time when Nature did not follow a fixed order, when the relations of cause and effect were not definite, and when extraneous agencies interfered with the general course of Nature. Cautious men will allow that a universe so different from

that which we know may have existed just as a very candid thinker may admit that a world in which two and two do not make four, and in which two straight lines do inclose a space, may exist. But the same caution which forces the admission of such possibilities demands a great deal of evidence before it recognises them to be anything more substantial. And when it is asserted that, so many thousand years ago, events occurred in a manner utterly foreign to and inconsistent with the existing laws of Nature, men who without being particularly cautious are simply honest thinkers, unwilling to deceive themselves or delude others, ask for trustworthy evidence of the fact.

Did things so happen or did they not? This is a historical question, and one the answer to which must be sought in the same way as the solution of any other historical problem.

So far as I know, there are only three hypotheses which ever have been entertained, or which well can be entertained, respecting the past history of Nature. I will, in the first place, state the hypotheses, and then I will consider what evidence bearing upon them is in our possession, and by what light of criticism that evidence is to be interpreted.

Upon the first hypothesis, the assumption is, that phenomena of Nature similar to those exhibited by the present world have always existed; in other words, that the universe has existed, from all eternity, in what may be broadly termed its present condition.

The second hypothesis is that the present state of things has had only a limited duration; and that, at some period in the past, a condition of the world, essentially similar to that which we now know, came into existence, without any precedent condition from which it could have naturally proceeded. The assumption that successive states of Nature have arisen, each without any relation of natural causation to an antecedent state, is a mere modification of this second hypothesis.

The third hypothesis also assumes that the present state of things has had but a limited duration ; but it supposes that this state has been evolved by a natural process from an antecedent state, and that from another, and so on ; and, on this hypothesis, the attempt to assign any limit to the series of past changes is, usually, given up.

It is so needful to form clear and distinct notions of what is really meant by each of these hypotheses that I will ask you to imagine what, according to each, would have been visible to a spectator of the events which constitute the history of the earth. On the first hypothesis, however far back in time that spectator might be placed, he would see a world essentially, though perhaps not in all its details, similar to that which now exists. The animals which existed would be the ancestors of those which now live, and similar to them ; the plants, in like manner, would be such as we know ; and the mountains, plains, and waters would foreshadow the salient features of our present land and water. This view was held more or less distinctly, sometimes combined with the notion of recurrent cycles of change, in ancient times ; and its influence has been felt down to the present day. It is worthy of remark that it is a hypothesis which is not inconsistent with the doctrine of Uniformitarianism, with which geologists are familiar. That doctrine was held by Hutton, and in his earlier days by Lyell. Hutton was struck by the demonstration of astronomers that the perturbations of the planetary bodies, however great they may be, yet sooner or later right themselves ; and that the solar system possesses a self-adjusting power by which these aberrations are all brought back to a mean condition. Hutton imagined that the like might be true of terrestrial changes ; although no one recognised more clearly than he the fact that the dry land is being constantly washed down by rain and rivers and deposited in the sea ; and that thus, in

a longer or shorter time, the inequalities of the earth's surface must be levelled, and its high lands brought down to the ocean. But, taking into account the internal forces of the earth, which, upheaving the sea-bottom, give rise to new land, he thought that these operations of degradation and elevation might compensate each other ; and that thus, for any assignable time, the general features of our planet might remain what they are. And inasmuch as, under these circumstances, there need be no limit to the propagation of animals and plants, it is clear that the consistent working-out of the uniformitarian idea might lead to the conception of the eternity of the world. Not that I mean to say that either Hutton or Lyell held this conception—assuredly not ; they would have been the first to repudiate it. Nevertheless, the logical development of some of their arguments tends directly towards this hypothesis.

The second hypothesis supposes that the present order of things, at some no very remote time, had a sudden origin, and that the world, such as it now is, had chaos for its phenomenal antecedent. That is the doctrine which you will find stated most fully and clearly in the immortal poem of John Milton—the English *Divina Commedia*—“Paradise Lost.” I believe it is largely to the influence of that remarkable work, combined with the daily teachings to which we have all listened in our childhood, that this hypothesis owes its general wide diffusion as one of the current beliefs of English-speaking people. If you turn to the seventh book of “Paradise Lost,” you will find there stated the hypothesis to which I refer, which is briefly this : That this visible universe of ours came into existence at no great distance of time from the present ; and that the parts of which it is composed made their appearance, in a certain definite order, in the space of six natural days, in such a manner that, on the first of these days, light appeared ; that, on the second, the firmament, or

sky, separated the waters above, from the waters beneath, the firmament; that, on the third day, the waters drew away from the dry land, and upon it a varied vegetable life, similar to that which now exists, made its appearance; that the fourth day was signalled by the apparition of the sun, the stars, the moon, and the planets; that, on the fifth day, aquatic animals originated within the waters; that, on the sixth day, the earth gave rise to our four-footed terrestrial creatures, and to all varieties of terrestrial animals except birds, which had appeared on the preceding day; and, finally, that man appeared upon the earth, and the emergence of the universe from chaos was finished. Milton tells us, without the least ambiguity, what a spectator of these marvellous occurrences would have witnessed. I doubt not that his poem is familiar to all of you, but I should like to recall one passage to your minds, in order that I may be justified in what I have said regarding the perfectly concrete, definite, picture of the origin of the animal world which Milton draws. He says:—

“The sixth, and of creation last, arose
With evening harps and mawm, when God
said,
‘Let the earth bring forth soul living in her
kind,
Cattle and creeping things, and beast of the
earth,
Each in their kind!’ The earth obeyed, and,
straight
Opening her fertile womb, teemed at a birth
Innumerable living creatures, perfect forms,
Limbed and full-grown. Out of the ground
uprose,
As from his lair, the wild beast, where he
wons
In forest wild, in thicket, brake, or den;
Among the trees in pairs they rose, they
walked;
The cattle in the fields and meadows green;
Those rare and solitary; these in flocks
Pasturing at once, and in broad herds up-
sprung.
The grassy clods now calved; now half
appears
The tawny lion, pawing to get free
His hinder parts—then springs, as broke from
bonds,
And rampant shakes his brinded mane; the
bunce,

The libbard, and the tiger, as the mole
Rising, the crumbled earth above them tumbled
In hillocks; the swift stag from underground
Bore up his branching head; scarce from his
mould
Behemoth, biggest born of earth, upheaved
His vastness; fleeced the flocks and bleating
rose
As plants; ambiguous between sea and land,
The river-horse and scaly crocodile.
At once came forth whatever creeps the
ground,
Insect or worm.

There is no doubt as to the meaning of this statement, nor as to what a man of Milton's genius expected would have been actually visible to an eye-witness of this mode of origination of living things.

The third hypothesis, or the hypothesis of evolution, supposes that, at any comparatively late period of past time, our imaginary spectator would meet with a state of things very similar to that which now obtains; but that the likeness of the past to the present would gradually become less and less, in proportion to the remoteness of his period of observation from the present day; that the existing distribution of mountains and plains, of rivers and seas, would show itself to be the product of a slow process of natural change operating upon more and more widely different antecedent conditions of the mineral framework of the earth; until, at length, in place of that framework, he would behold only a vast nebulous mass, representing the constituents of the sun and of the planetary bodies. Preceding the forms of life which now exist, our observer would see animals and plants, not identical with them, but like them, increasing their differences with their antiquity and, at the same time, becoming simpler and simpler; until, finally, the world of life would present nothing but that undifferentiated protoplasmic matter which, so far as our present knowledge goes, is the common foundation of all vital activity.

The hypothesis of evolution supposes that in all this vast progression there would be no breach of continuity, no

...at which we could say "This is a natural process," and "This is not a natural process;" but that the whole might be compared to that wonderful operation of development which may be seen going on every day under our eyes, in virtue of which there arises, out of the semi-fluid comparatively homogeneous substance which we call an egg, the complicated organisation of one of the higher animals. That, in a few words, is what is meant by the hypothesis of evolution.

I have already suggested that, in dealing with these three hypotheses, in endeavouring to form a judgment as to which of them is the more worthy of belief, or whether none is worthy of belief—in which case our condition of mind should be that suspension of judgment which is so difficult to all but trained intellects—we should be indifferent to all *a priori* considerations. The question is a question of historical fact. The universe has come into existence somehow or other, and the problem is, whether it came into existence in one fashion, or whether it came into existence in another; and, as an essential preliminary to further discussion, permit me to say two or three words as to the nature and the kinds of historical evidence.

The evidence as to the occurrence of any event in past time may be ranged under two heads which, for convenience' sake, I will speak of as testimonial evidence and as circumstantial evidence. By testimonial evidence I mean human testimony; and by circumstantial evidence I mean evidence which is not human testimony. Let me illustrate by a familiar example what I understand by these two kinds of evidence, and what is to be said respecting their value.

Suppose that a man tells you that he saw a person strike another and kill him; that is testimonial evidence of the fact of murder. But it is possible to have circumstantial evidence of the fact of murder; that is to say, you may find a man dying with a wound upon his

head having exactly the form and character of the wound which is made by an axe, and, with due care in taking surrounding circumstances into account, you may conclude with the utmost certainty that the man has been murdered; that his death is the consequence of a blow inflicted by another man with that implement. We are very much in the habit of considering circumstantial evidence as of less value than testimonial evidence, and it may be that, where the circumstances are not perfectly clear and intelligible, it is a dangerous and unsafe kind of evidence; but it must not be forgotten that, in many cases, circumstantial is quite as conclusive as testimonial evidence, and that, not unfrequently, it is a great deal weightier than testimonial evidence. For example, take the case to which I referred just now. The circumstantial evidence may be better and more convincing than the testimonial evidence; for it may be impossible, under the conditions that I have defined, to suppose that the man met his death from any cause but the violent blow of an axe wielded by another man. The circumstantial evidence in favour of a murder having been committed, in that case, is as complete and as convincing as evidence can be. It is evidence which is open to no doubt and to no falsification. But the testimony of a witness is open to multitudinous doubts. He may have been mistaken. He may have been actuated by malice. It has constantly happened that even an accurate man has declared that a thing has happened in this, that, or the other way, when a careful analysis of the circumstantial evidence has shown that it did not happen in that way, but in some other way.

We may now consider the evidence in favour of or against the three hypotheses. Let me first direct your attention to what is to be said about the hypothesis of the eternity of the state of things in which we now live. What will first strike you is, that it is a hypothesis which, whether true or false, is not capable of verification.

by any evidence. For, in order to obtain either circumstantial or testimonial evidence sufficient to prove the eternity of duration of the present state of nature, you must have an eternity of witnesses

most, would be, that so far as the evidence could be traced, there was nothing to contradict the hypothesis. But when you look, not to the testimonial evidence—which, considering the

relative insignificance of the antiquity of human records, might not be good for much in this case—but to the circumstantial evidence, then you find that this hypothesis is absolutely incompatible with such evidence as we have; which is of so plain and so simple a character that it is impossible in any way to escape from the conclusions which it forces upon us.

You are, doubtless, all aware that the outer substance of the earth, which alone is accessible to direct observation, is not of a homogeneous character, but that it is made up of a number of layers or strata, the titles of the principal groups of which are placed upon the accompanying diagram. Each of these groups represents a number of beds of sand, of stone, of clay, of slate, and of various other materials.

On careful examination, it is found that the materials of which each of these layers of more or less hard rock are composed are, for the most part, of the same nature as those which are at present being formed under known conditions on the surface of the earth. For example, the chalk, which constitutes a great part of the Cretaceous formation in some parts

of the world, is practically identical in its physical and chemical characters with a substance which is now being formed at the bottom of the Atlantic Ocean, and covers an enormous area

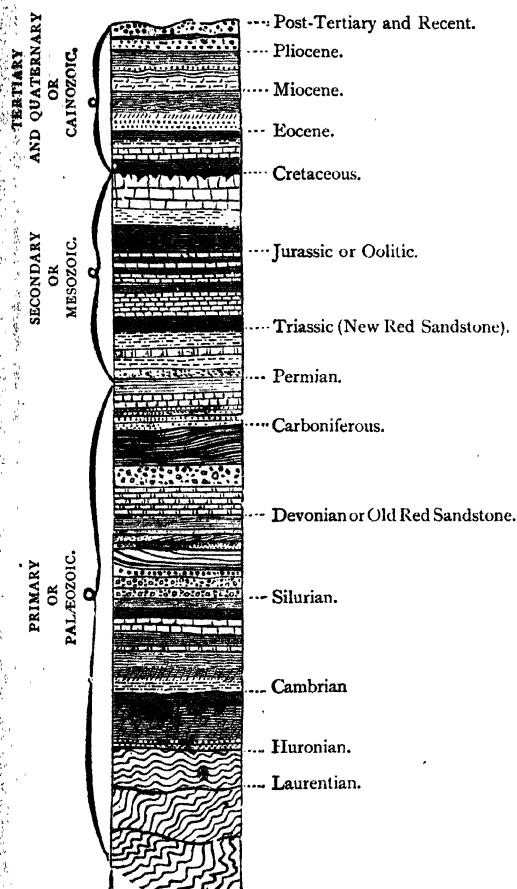


FIG. 1.—IDEAL SECTION OF THE CRUST OF THE EARTH.

or an infinity of circumstances, and neither of these is attainable. It is utterly impossible that such evidence should be carried beyond a certain point of time; and all that could be said, at

Other beds of rock are comparable with the sands which are being formed upon the shores, packed together, and so on. Thus, omitting rocks of igneous origin, it is demonstrable that all these beds of stone, of which a total of not less than seventy thousand feet is known, have been formed by natural agencies, either out of the waste and washing of the dry land, or else by the accumulation of the exuviae of plants and animals. Many of these strata are full of such exuviae—the so-called “fossils.” Remains of thousands of species of animals and plants, as perfectly recognisable as those of existing forms of life which you meet with in museums, or as the shells which you pick up upon the sea-beach, have been imbedded in the ancient sands, or muds, or limestones, just as they are being imbedded now, in sandy, or clayey, or calcareous subaqueous deposits. They furnish us with a record, the general nature of which cannot be misinterpreted, of the kinds of things that have lived upon the surface of the earth during the time that is registered by this great thickness of stratified rocks. But even a superficial study of these fossils shows us that the animals and plants which live at the present time have had only a temporary duration; for the remains of such modern forms of life are met with, for the most part, only in the uppermost or latest tertiaries, and their number rapidly diminishes in the lower deposits of that epoch. In the older tertiaries, the places of existing animals and plants are taken by other forms, as numerous and diversified as those which live now in the same localities, but more or less different from them; in the mesozoic rocks, these are replaced by others yet more divergent from modern types; and, in the palæozoic formations the contrast is still more marked. Thus the circumstantial evidence absolutely negatives the conception of the eternity of the present condition of things. We can say, with certainty, that the present condition of things has existed for a comparatively

short period; and that, so far as animal and vegetable nature are concerned, it has been preceded by a different condition. We can pursue this evidence until we reach the lowest of the stratified rocks, in which we lose the indications of life altogether. The hypothesis of the eternity of the present state of nature may therefore be put out of court.

We now come to what I will term Milton's hypothesis—the hypothesis that the present condition of things has endured for a comparatively short time; and, at the commencement of that time, came into existence within the course of six days. I doubt not that it may have excited some surprise in your minds that I should have spoken of this as Milton's hypothesis, rather than that I should have chosen the terms which are more customary, such as “the doctrine of creation,” or “the Biblical doctrine,” or “the doctrine of Moses,” all of which denominations, as applied to the hypothesis to which I have just referred, are certainly much more familiar to you than the title of the Miltonic hypothesis. But I have had what I cannot but think are very weighty reasons for taking the course which I have pursued. In the first place, I have discarded the title of the “doctrine of creation,” because my present business is not with the question why the objects which constitute Nature came into existence, but when they came into existence, and in what order. This is as strictly a historical question as the question when the Angles and the Jutes invaded England, and whether they preceded or followed the Romans. But the question about creation is a philosophical problem, and one which cannot be solved, or even approached, by the historical method. What we want to learn is, whether the facts, so far as they are known, afford evidence that things arose in the way described by Milton, or whether they do not; and, when that question is settled, it will be time enough to inquire into the causes of their origination.

In the second place, I have not

spoken of this doctrine as the Biblical doctrine. It is quite true that persons as diverse in their general views as Milton the Protestant and the celebrated Jesuit Father Suarez, each put upon the first chapter of Genesis the interpretation embodied in Milton's poem. It is quite true that this interpretation is that which has been instilled into every one of us in our childhood; but I do not for one moment venture to say that it can properly be called the Biblical doctrine. It is not my business, and does not lie within my competency, to say what the Hebrew text does, and what it does not signify; moreover, were I to affirm that this is the Biblical doctrine, I should be met by the authority of many eminent scholars, to say nothing of men of science, who, at various times, have absolutely denied that any such doctrine is to be found in Genesis. If we are to listen to many expositors of no mean authority, we must believe that what seems so clearly defined in Genesis—as if very great pains had been taken that there should be no possibility of mistake—is not the meaning of the text at all. The account is divided into periods that we may make just as long or as short as convenience requires. We are also to understand that it is consistent with the original text to believe that the most complex plants and animals may have been evolved by natural processes, lasting for millions of years, out of structureless rudiments. A person who is not a Hebrew scholar can only stand aside and admire the marvellous flexibility of a language which admits of such diverse interpretations. But assuredly, in the face of such contradictions of authority upon matters respecting which he is incompetent to form any judgment, he will abstain, as I do, from giving any opinion.

In the third place, I have carefully abstained from speaking of this as the Mosaic doctrine, because we are now assured upon the authority of the highest critics, and even of dignitaries of the

Church, that there is no evidence that Moses wrote the Book of Genesis, or knew anything about it. You will understand that I give no judgment—it would be an impertinence upon my part to volunteer even a suggestion—upon such a subject. But, that being the state of opinion among the scholars and the clergy, it is well for the unlearned, in Hebrew lore, and for the laity, to avoid entangling themselves in such a vexed question. Happily, Milton leaves us no excuse for doubting what he means, and I shall therefore be safe in speaking of the opinion in question as the Miltonic hypothesis.

Now we have to test that hypothesis. For my part, I have no prejudice one way or the other. If there is evidence in favour of this view, I am burdened by no theoretical difficulties in the way of accepting it; but there must be evidence. Scientific men get an awkward habit—no, I won't call it that, for it is a valuable habit—of believing nothing unless there is evidence for it; and they have a way of looking upon belief which is not based upon evidence, not only as illogical, but as immoral. We will, if you please, test this view by the circumstantial evidence alone, for, from what I have said, you will understand that I do not propose to discuss the question of what testimonial evidence is to be adduced in favour of it. If those whose business it is to judge are not at one as to the authenticity of the only evidence of that kind which is offered, nor as to the facts to which it bears witness, the discussion of such evidence is superfluous.

But I may be permitted to regret this necessity of rejecting the testimonial evidence the less, because the examination of the circumstantial evidence leads to the conclusion, not only that it is incompetent to justify the hypothesis, but that, so far as it goes, it is contrary to the hypothesis.

The considerations upon which I base this conclusion are of the simplest possible character. The Miltonic hypothesis contains assertions of a very

minite character relating to the succession of living forms. It is stated that plants, for example, made their appearance upon the third day, and not before. And you will understand that what the poet means by plants are such plants as now live, the ancestors, in the ordinary way of propagation of like by like, of the trees and shrubs which flourish in the present world. It must needs be so; for, if they were different, either the existing plants have been the result of a separate origination since that described by Milton, of which we have no record, nor any ground for supposition that such an occurrence has taken place; or else they have arisen by a process of evolution from the original stocks.

In the second place, it is clear that there was no animal life before the fifth day, and that, on the fifth day, aquatic animals and birds appeared. And it is further clear that terrestrial living things, other than birds, made their appearance upon the sixth day and not before. Hence, it follows that, if, in the large mass of circumstantial evidence as to what really has happened in the past history of the globe we find indications of the existence of terrestrial animals, other than birds, at a certain period, it is perfectly certain that all that has taken place, since that time, must be referred to the sixth day.

In the great Carboniferous formation, whence America derives so vast a proportion of her actual and potential wealth, in the beds of coal which have been formed from the vegetation of that period, we find abundant evidence of the existence of terrestrial animals. They have been described, not only by European but by your own naturalists. There are to be found numerous insects allied to our cockroaches. There are to be found spiders and scorpions of large size, the latter so similar to existing scorpions that it requires the practised eye of the naturalist to distinguish them. Inasmuch as these animals can be proved to have been alive in the Carboniferous epoch, it is perfectly clear

that, if the Miltonic account is to be accepted, the huge mass of rocks extending from the middle of the Palæozoic formations to the uppermost members of the series, must belong to the day which is termed by Milton the sixth. But, further, it is expressly stated that aquatic animals took their origin on the fifth day, and not before; hence, all formations in which remains of aquatic animals can be proved to exist, and which therefore testify that such animals lived at the time when these formations were in course of deposition, must have been deposited during or since the period which Milton speaks of as the fifth day. But there is absolutely no fossiliferous formation in which the remains of aquatic animals are absent. The oldest fossils in the Silurian rocks are exuvæ of marine animals; and if the view which is entertained by Principal Dawson and Dr. Carpenter respecting the nature of the *Eozoön* be well-founded, aquatic animals existed at a period as far antecedent to the deposition of the coal as the coal is from us; inasmuch as the *Eozoön* is met with in those Laurentian strata which lie at the bottom of the series of stratified rocks. Hence it follows, plainly enough, that the whole series of stratified rocks, if they are to be brought into harmony with Milton, must be referred to the fifth and sixth days, and that we cannot hope to find the slightest trace of the products of the earlier days in the geological record. When we consider these simple facts, we see how absolutely futile are the attempts that have been made to draw a parallel between the story told by so much of the crust of the earth as is known to us and the story which Milton tells. The whole series of fossiliferous stratified rocks must be referred to the last two days; and neither the Carboniferous, nor any other, formation can afford evidence of the work of the third day.

Not only is there this objection to any attempt to establish a harmony between the Miltonic account and the facts re-

corded in the fossiliferous rocks, but there is a further difficulty. According to the Miltonic account, the order in which animals should have made their appearance in the stratified rocks would be this: Fishes, including the great whales, and birds; after them, all varieties of terrestrial animals except birds. Nothing could be further from the facts as we find them; we know of not the slightest evidence of the existence of birds before the Jurassic, or perhaps the Triassic, formation; while terrestrial animals, as we have just seen, occur in the Carboniferous rocks.

If there were any harmony between the Miltonic account and the circumstantial evidence, we ought to have abundant evidence of the existence of birds in the Carboniferous, the Devonian, and the Silurian rocks. I need hardly say that this is not the case, and that not a trace of birds makes its appearance until the far later period which I have mentioned.

And again, if it be true that all varieties of fishes and the great whales, and the like, made their appearance on the fifth day, we ought to find the remains of these animals in the older rocks,—in those which were deposited before the Carboniferous epoch. Fishes we do find, in considerable number and variety; but the great whales are absent, and the fishes are not such as now live. Not one solitary species of fish now in existence is to be found in the Devonian or Silurian formations. Hence we are introduced afresh to the dilemma which I have already placed before you: either the animals which came into existence on the fifth day were not such as those which are found at present, are not the direct and immediate ancestors of those which now exist; in which case, either fresh creations of which nothing is said, or a process of evolution, must have occurred; or else the whole story must be given up, as not only devoid of any circumstantial evidence, but contrary to such evidence as exists.

I placed before you in a few words,

some little time ago, a statement of the sum and substance of Milton's hypothesis. Let me now try to state, as briefly, the effect of the circumstantial evidence bearing upon the past history of the earth which is furnished, without the possibility of mistake, with no chance of error as to its chief features, by the stratified rocks. What we find is, that the great series of formations represents a period of time of which our human chronologies hardly afford us a unit of measure. I will not pretend to say how we ought to estimate this time, in millions or in billions of years. For my purpose, the determination of its absolute duration is wholly unessential. But that the time was enormous there can be no question.

It results from the simplest methods of interpretation, that leaving out of view certain patches of metamorphosed rocks, and certain volcanic products, all that is now dry land has once been at the bottom of the waters. It is perfectly certain that, at a comparatively recent period of the world's history—the Cretaceous epoch—none of the great physical features which at present mark the surface of the globe existed. It is certain that the Rocky Mountains were not. It is certain that the Himalaya Mountains were not. It is certain that the Alps and the Pyrenees had no existence. The evidence is of the plainest possible character, and is simply this:—We find raised up on the flanks of these mountains, elevated by the forces of upheaval which have given rise to them, masses of Cretaceous rock which formed the bottom of the sea before those mountains existed. It is therefore clear that the elevatory forces which gave rise to the mountains operated subsequently to the Cretaceous epoch; and that the mountains themselves are largely made up of the materials deposited in the sea which once occupied their place. As we go back in time, we meet with constant alternations of sea and land, of estuary and open ocean; and, in correspondence with these alternations, we observe the

changes in the fauna and flora to which I have referred.

But the inspection of these changes give us no right to believe that there has been any discontinuity in natural processes. There is no trace of general cataclysms, of universal deluges, or sudden destructions of a whole fauna or flora. The appearances which were formerly interpreted in that way have all been shown to be delusive, as our knowledge has increased and as the blanks which formerly appeared to exist between the different formations have been filled up. That there is no absolute break between formation and formation, that there has been no sudden disappearance of all the forms of life and replacement of them by others, but that changes have gone on slowly and gradually, that one type has died out and another has taken its place, and that thus, by insensible degrees, one fauna has been replaced by another, are conclusions strengthened by constantly increasing evidence. So that within the whole of the immense period indicated by the fossiliferous stratified rocks, there is assuredly not the slightest proof of any break in the uniformity of Nature's operations, no indication that events have followed other than a clear and orderly sequence.

That, I say, is the natural and obvious teaching of the circumstantial evidence contained in the stratified rocks. I leave you to consider how far, by any ingenuity of interpretation, by any stretching of the meaning of language, it can be brought into harmony with the Miltonic hypothesis.

There remains the third hypothesis, that of which I have spoken as the hypothesis of evolution; and I purpose that, in lectures to come, we should discuss it as carefully as we have considered the other two hypotheses. I need not say that it is quite hopeless to look for testimonial evidence of evolution. The very nature of the case precludes the possibility of such evidence, for the human race can no more

be expected to testify to its own origin, than a child can be tendered as a witness of its own birth. Our sole inquiry is, what foundation circumstantial evidence lends to the hypothesis, or whether it lends none, or whether it controverts the hypothesis. I shall deal with the matter entirely as a question of history. I shall not indulge in the discussion of any speculative probabilities. I shall not attempt to show that Nature is unintelligible unless we adopt some such hypothesis. For anything I know about the matter, it may be the way of Nature to be unintelligible; she is often puzzling, and I have no reason to suppose that she is bound to fit herself to our notions.

I shall place before you three kinds of evidence entirely based upon what is known of the forms of animal life which are contained in the series of stratified rocks. I shall endeavour to show you that there is one kind of evidence which is neutral, which neither helps evolution nor is inconsistent with it. I shall then bring forward a second kind of evidence which indicates a strong probability in favour of evolution, but does not prove it; and, lastly, I shall adduce a third kind of evidence which, being as complete as any evidence which we can hope to obtain upon such a subject, and being wholly and strikingly in favour of evolution, may fairly be called demonstrative evidence of its occurrence.

II

THE HYPOTHESIS OF EVOLUTION. THE NEUTRAL AND THE FAVOURABLE EVIDENCE

In the preceding lecture I pointed out that there are three hypotheses which may be entertained, and which have been entertained, respecting the past history of life upon the globe. According to the first of these hypotheses, living beings, such as now exist, have existed from all eternity upon this earth. We

tested that hypothesis by the circumstantial evidence, as I called it, which is furnished by the fossil remains contained in the earth's crust, and we found that it was obviously untenable. I then proceeded to consider the second hypothesis, which I termed the Miltonic hypothesis, not because it is of any particular consequence whether John Milton seriously entertained it or not, but because it is stated in a clear and unmistakable manner in his great poem. I pointed out to you that the evidence at our command as completely and fully negatives that hypothesis as it did the preceding one. And I confess that I had too much respect for your intelligence to think it necessary to add that the negation was equally clear and equally valid, whatever the source from which that hypothesis might be derived, or whatever the authority by which it might be supported. I further stated that, according to the third hypothesis, or that of evolution, the existing state of things is the last term of a long series of states, which, when traced back, would be found to show no interruption and no breach in the continuity of natural causation. I propose, in the present and the following lecture, to test this hypothesis rigorously by the evidence at command, and to inquire how far that evidence can be said to be indifferent to it, how far it can be said to be favourable to it, and, finally, how far it can be said to be demonstrative.

From almost the origin of the discussions about the existing condition of the animal and vegetable worlds and the causes which have determined that condition, an argument has been put forward as an objection to evolution, which we shall have to consider very seriously. It is an argument which was first clearly stated by Cuvier in his criticism of the doctrines propounded by his great contemporary, Lamarck. The French expedition to Egypt had called the attention of learned men to the wonderful store of antiquities in that country, and there had been brought back to France numerous mummified corpses of the animals

which the ancient Egyptians reared and preserved, and which, at a reasonable computation, must have lived not less than three or four thousand years before the time at which they were thus brought to light. Cuvier endeavoured to test the hypothesis that animals have undergone gradual and progressive modifications of structure, by comparing the skeletons and such other parts of the mummies as were in a fitting state of preservation, with the corresponding parts of the representatives of the same species now living in Egypt. He arrived at the conviction that no appreciable change had taken place in these animals in the course of this considerable lapse of time, and the justice of his conclusion is not disputed.

It is obvious that, if it can be proved that animals have endured, without undergoing any demonstrable change of structure, for so long a period as four thousand years, no form of the hypothesis of evolution which assumes that animals undergo a constant and necessary progressive change can be tenable; unless, indeed, it be further assumed that four thousand years is too short a time for the production of a change sufficiently great to be detected.

But it is no less plain that if the process of evolution of animals is not independent of surrounding conditions; if it may be indefinitely hastened or retarded by variations in these conditions; or if evolution is simply a process of accommodation to varying conditions; the argument against the hypothesis of evolution based on the unchanged character of the Egyptian fauna is worthless. For the monuments which are coeval with the mummies testify as strongly to the absence of change in the physical geography and the general conditions of the land of Egypt, for the time in question, as the mummies do to the unvarying characters of its living population.

The progress of research since Cuvier's time has supplied far more striking examples of the long duration of specific forms of life than those which are furnished by the mummified Ibises and

of the Nile of Egypt. A remarkable case
 may be found in your own country, in
 the neighbourhood of the falls of
 Niagara. In the immediate vicinity of
 the whirlpool, and again upon Goat
 Island, in the superficial deposits which
 cover the surface of the rocky subsoil
 in these regions, there are found remains
 of animals in perfect preservation, and
 among them, shells belonging to exactly
 the same species as those which at present
 inhabit the still waters of Lake
 Erie. It is evident, from the structure
 of the country, that these animal remains
 were deposited in the beds in which they
 occur at a time when the lake extended
 over the region in which they are found.
 This involves the conclusion that they
 lived and died before the falls had cut
 their way back through the gorge of
 Niagara; and, indeed, it has been determined
 that, when these animals lived, the falls
 of Niagara must have been at
 least six miles further down the river
 than they are at present. Many computations
 have been made of the rate at
 which the falls are thus cutting their way
 back. Those computations have varied
 greatly, but I believe I am speaking
 within the bounds of prudence, if I
 assume that the falls of Niagara have
 not retreated at a greater pace than
 about a foot a year. Six miles, speaking
 roughly, are 30,000 feet; 30,000 feet, at
 a foot a year, gives 30,000 years; and
 thus we are fairly justified in concluding
 that no less a period than this has passed
 since the shell-fish, whose remains are
 left in the beds to which I have referred,
 were living creatures.

But there is still stronger evidence of
 the long duration of certain types. I
 have already stated that, as we work our
 way through the great series of the
 Tertiary formations, we find many species
 of animals identical with those which live
 at the present day, diminishing in
 numbers, it is true, but still existing, in a
 certain proportion, in the oldest of the
 Tertiary rocks. Furthermore, when we
 examine the rocks of the Cretaceous
 epoch, we find the remains of some

animals which the closest scrutiny cannot
 show to be, in any important respect,
 different from those which live at the
 present time. That is the case with one of
 the cretaceous lamp-shells (*Terebratula*)
 which has continued to exist unchanged,
 or with insignificant variations, down to
 the present day. Such is the case with
 the *Globigerina*, the skeletons of which,
 aggregated together, form a large proportion
 of our English chalk. Those
Globigerina can be traced down to the
Globigerina which live at the surface of
 the present great oceans, and the remains
 of which, falling to the bottom of the sea
 give rise to a chalky mud. Hence it
 must be admitted that certain existing
 species of animals show no distinct sign
 of modification, or transformation, in the
 course of a lapse of time as great as that
 which carries us back to the Cretaceous
 period; and which, whatever its absolute
 measure, is certainly vastly greater than
 thirty thousand years.

There are groups of species so closely
 allied together, that it needs the eye of
 a naturalist to distinguish them one from
 another. If we disregard the small
 differences which separate these forms,
 and consider all the species of such
 groups as modifications of one type, we
 shall find that, even among the higher
 animals, some types have had a marvellous
 duration. In the chalk, for example,
 there is found a fish belonging to the
 highest and the most differentiated group
 of osseous fishes, which goes by the
 name of *Beryx*. The remains of that
 fish are among the most beautiful and
 well-preserved of the fossils found in our
 English chalk. It can be studied
 anatomically, so far as the hard parts are
 concerned, almost as well as if it were a
 recent fish. But the genus *Beryx* is represented,
 at the present day, by very
 closely allied species which are living in
 the Pacific and Atlantic Oceans. We
 may go still farther back. I have already
 referred to the fact, that the Carboniferous
 formations, in Europe and in
 America, contain the remains of scorpions
 in an admirable state of preservation and,

that those scorpions are hardly distinguishable from such as now live. I do not mean to say that they are not different, but close scrutiny is needed in order to distinguish them from modern scorpions.

More than this. At the very bottom of the Silurian series, in beds which are by some authorities referred to the Cambrian formation, where the signs of life begin to fail us—even there, among the few and scanty animal remains which are discoverable, we find species of molluscous animals which are so closely allied to existing forms that, at one time, they were grouped under the same generic name. I refer to the well known *Lingula* of the *Lingula* flags, lately, in consequence of some slight differences, placed in the new genus *Lingulella*. Practically, it belongs to the same great generic group as the *Lingula*, which is to be found at the present day upon your own shores and those of many other parts of the world.

The same truth is exemplified if we turn to certain great periods of the earth's history—as, for example, the Mesozoic epoch. There are groups of reptiles, such as the *Ichthyosauria* and the *Plesiosauria*, which appear shortly after the commencement of this epoch, and they occur in vast numbers. They disappear with the chalk and, throughout the whole of the great series of Mesozoic rocks, they present no such modifications as can safely be considered evidence of progressive modification.

Facts of this kind are undoubtedly fatal to any form of the doctrine of evolution which postulates the supposition that there is an intrinsic necessity, on the part of animal forms which have once come into existence, to undergo continual modification; and they are as distinctly opposed to any view which involves the belief, that such modification as may occur, must take place, at the same rate, in all the different types of animal or vegetable life. The facts, as I have placed them before you obviously directly contradict any form of the hypothesis of evolution which stands in need of these two postulates.

But, one great service that has been rendered by Mr. Darwin to the doctrine of evolution in general is this: he has shown that there are two chief factors in the process of evolution: one of them is the tendency to vary, the existence of which in all living forms may be proved by observation; the other is the influence of surrounding conditions upon what I may call the parent form and the variations which are thus evolved from it. The cause of the production of variations is a matter not at all properly understood at present. Whether variation depends upon some intricate machinery—if I may use the phrase—of the living organism itself, or whether it arises through the influence of conditions upon that form, is not certain, and the question may, for the present, be left open. But the important point is that granting the existence of the tendency to the production of variations; then, whether the variations which are produced shall survive and supplant the parent, or whether the parent form shall survive and supplant the variations, is a matter which depends entirely on those conditions which give rise to the struggle for existence. If the surrounding conditions are such that the parent form is more competent to deal with them, and flourish in them than the derived forms, then, in the struggle for existence, the parent form will maintain itself and the derived forms will be exterminated. But if, on the contrary, the conditions are such as to be more favourable to a derived than to the parent form, the parent form will be extirpated and the derived form will take its place. In the first case, there will be no progression, no change of structure, through any imaginable series of ages; in the second place there will be modification of change and form.

Thus the existence of these persistent types, as I have termed them, is no real obstacle in the way of the theory of evolution. Take the case of the scorpions to which I have just referred. No doubt, since the Carboniferous epoch, conditions have always obtained, such as existed when the scorpions of that epoch

nourished; conditions in which scorpions find themselves better off, more competent to deal with the difficulties in their way, than any variation from the scorpion type which they may have produced; and, for that reason, the scorpion type has persisted, and has not been supplanted by any other form. And there is no reason, in the nature of things, why, as long as this world exists, if there be conditions more favourable to scorpions than to any variation which may arise from them, these forms of life should not persist.

Therefore, the stock objection to the hypothesis of evolution, based on the long duration of certain animal and vegetable types, is no objection at all. The facts of this character—and they are numerous—belong to that class of evidence which I have called indifferent. That is to say, they may afford no direct support to the doctrine of evolution, but they are capable of being interpreted in perfect consistency with it.

There is another order of facts belonging to the class of negative or indifferent evidence. The great group of Lizards, which abound in the present world, extends through the whole series of formations as far back as the Permian, or latest Palæozoic, epoch. These Permian lizards differ astonishingly little from the lizards which exist at the present day. Comparing the amount of the differences between them and modern lizards, with the prodigious lapse of time between the Permian epoch and the present age, it may be said that the amount of change is insignificant. But, when we carry our researches farther back in time, we find no trace of lizards, nor of any true reptile whatever, in the whole mass of formations beneath the Permian.

Now, it is perfectly clear that if our palæontological collections are to be taken, even approximately, as an adequate representation of all the forms of animals and plants that have ever lived; and if the record furnished by the known series of beds of stratified rock covers

the whole series of events which constitute the history of life on the globe, such a fact as this directly contravenes the hypothesis of evolution; because this hypothesis postulates that the existence of every form must have been preceded by that of some form little different from it. Here, however, we have to take into consideration that important truth so well insisted upon by Lyell and by Darwin—the imperfection of the geological record. It can be demonstrated that the geological record must be incomplete, that it can only preserve remains found in certain favourable localities and under particular conditions; that it must be destroyed by processes of denudation, and obliterated by processes of metamorphosis. Beds of rock of any thickness, crammed full of organic remains, may yet, either by the percolation of water through them, or by the influence of subterranean heat, lose all trace of these remains, and present the appearance of beds of rock formed under conditions in which living forms were absent. Such metamorphic rocks occur in formations of all ages; and, in various cases, there are very good grounds for the belief that they have contained organic remains, and that those remains have been absolutely obliterated.

I insist upon the defects of the geological record the more because those who have not attended to these matters are apt to say, "It is all very well, but, when you get into a difficulty with your theory of evolution, you appeal to the incompleteness and the imperfection of the geological record;" and I want to make it perfectly clear to you that this imperfection is a great fact, which must be taken into account in all our speculations, or we shall constantly be going wrong.

You see the singular series of footmarks, drawn of its natural size in the large diagram hanging up here (Fig. 2), which I owe to the kindness of my friend Professor Marsh, with whom I had the opportunity recently of visiting the

precise locality in Massachusetts in which these tracks occur. I am, therefore, able to give you my own testimony, if needed, that the diagram accurately represents what we saw. The valley of the Connecticut is classical ground for the geologist. It contains great beds of sandstone, covering many square miles, which have evidently formed a part of an ancient sea-shore, or, it may be, lake-shore. For a certain period of time after their deposition, these beds have remained sufficiently soft to receive the impressions of the feet of whatever animals walked over them, and to preserve them afterwards, in exactly the same way as such impressions are at this hour preserved on the shores of the Bay of Fundy and elsewhere. The diagram represents the track of some gigantic

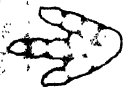


FIG. 2.—TRACKS OF BRONTOZOOM.

animal, which walked on its hind legs. You see the series of marks made alternately by the right and by the left foot; so that, from one impression to the other of the three-toed foot on the same side, is one stride, and that stride, as we measured it, is six feet nine inches. I leave you, therefore, to form an impression of the magnitude of the creature which, as it walked along the ancient shore, made these impressions.

Of such impressions there are untold thousands upon these sandstones. Fifty or sixty different kinds have been discovered, and they cover vast areas. But, up to this present time, not a bone, not a fragment, of any one of the animals which left these great footmarks has been found; in fact, the only animal remains which have been met with in all these deposits, from the time of their discovery to the present day—though they have been carefully hunted over—is a fragmentary skeleton of one of the smaller

forms. What has become of the bones of all these animals? You see we are not dealing with little creatures, but with animals that make a step of six feet nine inches; and their remains must have been left somewhere. The probability is, that they have been dissolved away, and completely lost.

I have had occasion to work out the nature of fossil remains, of which there was nothing left except casts of the bones, the solid material of the skeleton having been dissolved out by percolating water. It was a chance, in this case, that the sandstone happened to be of such a constitution as to set, and to allow the bones to be afterward dissolved out, leaving cavities of the exact shape of the bones. Had that constitution been other than what it was, the bones

would have been dissolved, the layers of sandstone would have fallen together into one mass, and not the slightest indication that the animal had existed

would have been discoverable.

I know of no more striking evidence than these facts afford, of the caution which should be used in drawing the conclusion, from the absence of organic remains in a deposit, that animals or plants did not exist at the time it was formed. I believe that, with a right understanding of the doctrine of evolution on the one hand, and a just estimation of the importance of the imperfection of the geological record on the other, all difficulty is removed from the kind of evidence to which I have adverted; and that we are justified in believing that all such cases are examples of what I have designated negative or indifferent evidence—that is to say, they in no way directly advance the hypothesis of evolution, but they are not to be regarded as obstacles in the way of our belief in that doctrine.

I now pass on to the consideration of those cases which, for reasons which

will point out to you by and by, are not to be regarded as demonstrative of the truth of evolution, but which are such as must exist if evolution be true, and which therefore are, upon the whole, evidence in favour of the doctrine. If the doctrine of evolution be true, it follows, that, however diverse the different groups of animals and of plants may be, they must all, at one time or other, have been connected by gradational forms; so that, from the highest animals, whatever they may be, down to the lowest speck of protoplasmic matter in which life can be manifested, a series of gradations, leading from one end of the series to the other, either exists or has existed. Undoubtedly that is a necessary postulate of the doctrine of evolution. But when we look upon living Nature as it is, we find a totally different state of things. We find that animals and plants fall into groups, the different members of which are pretty closely allied together, but which are separated by definite, larger or smaller, breaks, from other groups. In other words, no intermediate forms which bridge over these gaps or intervals are, at present, to be met with.

To illustrate what I mean: Let me call your attention to those vertebrate animals which are most familiar to you, such as mammals, birds, and reptiles. At the present day, these groups of animals are perfectly well-defined from one another. We know of no animal now living which, in any sense, is intermediate between the mammal and the bird, or between the bird and the reptile; but, on the contrary, there are many very distinct anatomical peculiarities, well-defined marks, by which the mammal is separated from the bird, and the bird from the reptile. The distinctions are obvious and striking if you compare the definitions of these great groups as they now exist.

The same may be said of many of the subordinate groups, or orders, into which these great classes are divided. At the present time, for example, there are

numerous forms of non-ruminant pachyderms, or what we may call broadly, the pig tribe, and many varieties of ruminants. These latter have their definite characteristics, and the former have their distinguishing peculiarities. But there is nothing that fills up the gap between the ruminants and the pig tribe. The two are distinct. Such also is the case in respect of the minor groups of the class of reptiles. The existing fauna shows us crocodiles, lizards, snakes, and tortoises; but no connecting link between the crocodile and lizard, nor between the lizard and snake, nor between the snake and the crocodile, nor between any two of these groups. They are separated by absolute breaks. If, then, it could be shown that this state of things had always existed, the fact would be fatal to the doctrine of evolution. If the intermediate gradations, which the doctrine of evolution requires to have existed between these groups, are not to be found anywhere in the records of the past history of the globe, their absence is a strong and weighty negative argument against evolution; while, on the other hand, if such intermediate forms are to be found, that is so much to the good of evolution; although for reasons which I will lay before you by and by, we must be cautious in our estimate of the evidential cogency of facts of this kind.

It is a very remarkable circumstance that, from the commencement of the serious study of fossil remains, in fact from the time when Cuvier began his brilliant researches upon those found in the quarries of Montmartre, palæontology has shown what she was going to do in this matter, and what kind of evidence it lay in her power to produce.

I said just now that, in the existing Fauna, the group of pig-like animals and the group of ruminants are entirely distinct; but one of the first of Cuvier's discoveries was an animal which he called the *Anoplotherium*, and which proved to be, in a great many important respects, intermediate in character between the pigs on the one hand, and

the ruminants on the other. Thus, research into the history of the past did, to a certain extent, tend to fill up the breach between the group of ruminants and the group of pigs. Another remarkable animal restored by the great French palaeontologist, the *Palaeotherium*, similarly tended to connect together animals to all appearance so different as the rhinoceros, the horse, and the tapir. Subsequent research has brought to light multitudes of facts of the same order; and, at the present day, the investigations of such anatomists as Rüttimeyer and Gaudry have tended to fill up, more and more, the gaps in our existing series of mammals, and to connect groups formerly thought to be distinct.

But I think it may have an especial interest if, instead of dealing with these examples, which would require a great deal of tedious osteological detail, I take the case of birds and reptiles; groups which, at the present day, are so clearly distinguished from one another that there are perhaps no classes of animals which, in popular apprehension, are more completely separated. Existing birds, as you are aware, are covered with feathers; their anterior extremities, specially and peculiarly modified, are converted into wings, by the aid of which most of them are able to fly; they walk upright upon two legs; and these limbs, when they are considered anatomically, present a great number of exceedingly remarkable peculiarities, to which I may have occasion to advert incidentally as I go on, and which are not met with, even approximately, in any existing forms of reptiles. On the other hand, existing reptiles have no feathers. They may have naked skins, or be covered with horny scales, or bony plates, or with both. They possess no wings; they neither fly by means of their fore-limbs, nor habitually walk upright upon their hind-limbs; and the bones of their legs present no such modifications as we find in birds. It is impossible to imagine any two groups more definitely and distinctly separated, notwithstanding certain

characters which they possess in common.

As we trace the history of birds back in time, we find their remains, sometimes in great abundance, throughout the whole extent of the tertiary rocks; but, so far as our present knowledge goes, the birds of the tertiary rocks retain the same essential characters as the birds of the present day. In other words, the tertiary birds come within the definition of the class constituted by existing birds, and are as much separated from reptiles as existing birds are. Not very long ago no remains of birds had been found below the tertiary rocks, and I am not sure but that some persons were prepared to demonstrate that they could not have existed at an earlier period. But, in the course of the last few years, such remains have been discovered in England; though, unfortunately, in so imperfect and fragmentary a condition, that it is impossible to say whether they differed from existing birds in any essential character or not. In your country the development of the cretaceous series of rocks is enormous; the conditions under which the later cretaceous strata have been deposited are highly favourable to the preservation of organic remains; and the researches, full of labour and risk, which have been carried on by Professor Marsh in these cretaceous rocks of Western America, have rewarded him with the discovery of forms of birds of which we had hitherto no conception. By his kindness, I am enabled to place before you a restoration of one of these extraordinary birds, every part of which can be thoroughly justified by the more or less complete skeletons, in a very perfect state of preservation, which he has discovered. This *Hesperornis* (Fig. 3), which measured between five and six feet in length, is astonishingly like our existing divers or grebes in a great many respects; so like them indeed that, had the skeleton of *Hesperornis* been found in a museum without its skull, it probably would have been placed in the same group of birds

as the divers and grebes of the present day.¹ But *Hesperornis* differs from all existing birds, and so far resembles reptiles, in one important particular—it is provided with teeth. The long jaws are armed with teeth which have curved crowns and thick roots (Fig. 4), and are not set in distinct sockets, but are lodged in a groove. In possessing true teeth, the *Hesperornis* differs from every existing bird, and from every bird yet discovered in the tertiary formations, the tooth-like serrations of the jaws in the *Odontopteryx* of the London clay being mere processes of the bony substance of the jaws, and not teeth in the proper sense of the word. In view of the characteristics of this bird we are therefore obliged to modify the definitions of the classes of birds and reptiles. Before the discovery of *Hesperornis*, the definition of the class Aves based upon our knowledge of existing birds might have been extended to all birds; it might have been said that the absence of teeth was characteristic of the class of birds; but the discovery of an animal which, in every part of its skeleton, closely agrees with existing birds, and yet possesses teeth, shows that there were ancient birds, which, in respect of possessing teeth, approached reptiles more nearly than any existing bird does.

¹ The absence of any keel on the breast-bone and some other osteological peculiarities, observed by Professor Marsh, however, suggest that *Hesperornis* may be a modification of a less specialised group of birds than that to which these existing aquatic birds belong.

and, to that extent, diminishes the hiatus between the two classes.

The same formation has yielded another bird *Ichthyornis* (Fig. 5), which also possesses teeth; but the teeth are situated in distinct sockets, while those of *Hesperornis* are not so lodged. The latter also has such very small, almost rudimentary wings, that it must have



FIG. 3.—*HESPERORNIS REGALIS* (Marsh).

been chiefly a swimmer and a diver like a Penguin; while *Ichthyornis* has strong wings and no doubt possessed corresponding powers of flight. *Ichthyornis* also differed in the fact that its vertebrae have not the peculiar characters of the vertebrae of existing and of all known tertiary birds, but were concave at each end. This discovery leads us to make a further modification in the definition of the group of birds, and to part with

another of the characters by which almost all existing birds are distinguished from reptiles.

Apart from the few fragmentary remains from the English greensand, to

exception of the Solenhofen shales. These so-called slates are composed of a fine grained calcareous mud which has hardened into lithographic stone, and in which organic remains are almost as well

preserved as they would be if they had been imbedded in so much plaster of Paris. They have yielded the *Archæopteryx*, the existence of which was first made known by the finding of a fossil feather, or rather of the impression of one. It is wonderful enough that such a perishable thing as a feather, and nothing more, should be discovered; yet for a long time, nothing was known of this bird except its feather. But by and by a solitary skeleton was discovered which is now in the British Museum. The skull of this solitary specimen is unfortunately wanting, and it is therefore uncertain whether the *Archæopteryx* possessed teeth or not.¹ But the remainder of the skeleton is so well preserved as to leave no doubt respecting the main features of the animal, which are very singular. The feet are not only altogether bird-like, but have the special characters of the feet of perching birds, while the body had a clothing of true feathers. Nevertheless, in some other respects, *Archæopteryx* is unlike a bird and like a reptile. There is a long tail composed of many vertebrae. The structure of the wing differs in some very re-

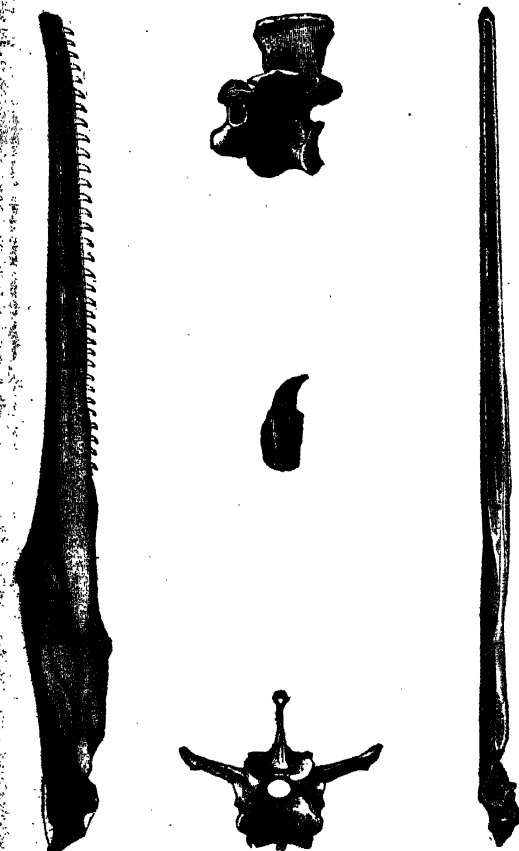


FIG. 4.—*HESPERORNIS REGALIS* (Marsh).

Side and upper views of half the lower jaw; side and end views of a vertebra and a separate tooth.)

which I have referred, the Mesozoic rocks, older than those in which *Hesperornis* and *Ichthyornis* have been discovered have afforded no certain evidence of birds, with the remarkable

¹ A second specimen, discovered in 1877, and at present in the Berlin museum, shows an excellently preserved skull with teeth: and three digits, all terminated by claws, in the fore-limb.

remarkable respects from that which it presents in a true bird. In the latter, the end of the wing answers to the thumb and two fingers of my hand; but the metacarpal bones, or those which answer to the bones of the fingers which lie in the palm of the hand, are fused together into one mass; and the whole apparatus, except the last joints of the thumb, is bound up in a sheath of integument, while the edge of the hand carries the principal quill feathers. In the *Archæopteryx*, the upper-arm bone is like that of a bird; and the two bones of the forearm are more or less like those of a bird, but the fingers are not bound together—they are free. What their number may have been is uncertain; but several, if not all, of them were terminated by strong curved claws, not like such as are sometimes found in birds, but such as reptiles possess; so that, in the *Archæopteryx*, we have an animal which, to a certain extent, occupies a midway place between a bird and a reptile. It is a bird so far as its foot and sundry other parts of its skeleton are concerned; it is essentially and thoroughly a bird by its feathers; but it is much more properly a reptile in the fact that the region which represents the hand has separate bones, with claws resembling those which terminate the forelimb of a reptile. Moreover, it had a long reptile-like tail with a fringe of feathers on each side; while, in all true birds hitherto known, the tail is relatively short, and the vertebræ which

constitute its skeleton are generally peculiarly modified.

Like the *Anoplotherium* and the *Palæotherium*, therefore, *Archæopteryx* tends to fill up the interval between

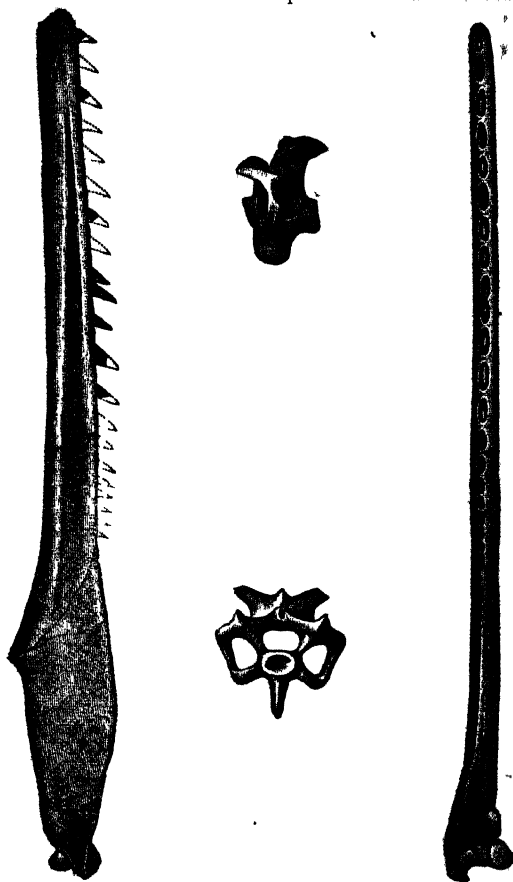


FIG. 5.—*ICHTHYORNIS DISPAR* (Maish).
 (Side and upper views of half the lower jaw; and side and end views of a vertebra.)

groups which, in the existing world, are widely separated, and to destroy the value of the definitions of zoological groups based upon our knowledge of existing forms. And such cases as

seems, at first, to be reduced to its upper end; a short slender bone united with the tibia, and ending in a point below, occupying its place. Examination of the lower end of a young foal's shin-bone, however, shows a distinct portion of osseous matter, which is the lower end of the fibula; so that the apparently single lower end of the shin-bone is really made up of the coalesced ends of the tibia and fibula, just as the apparently single lower end of the fore-arm bone is composed of the coalesced radius and ulna.

The heel of the horse is the part commonly known as the hock. The hinder cannon-bone answers to the middle metatarsal bone of the human foot, the pastern, coronary, and coffin bones, to the middle toe bones; the hind hoof to the nail, as in the fore-foot. And, as in the fore-foot, there are merely two splints to represent the second and the fourth toes. Sometimes a rudiment of a fifth toe appears to be traceable.

The teeth of a horse are not less peculiar than its limbs. The living engine, like all others, must be well stoked if it is to do its work; and the horse, if it is to make good its wear and tear, and to exert the enormous amount of force required for its propulsion, must be well and rapidly fed. To this end, good cutting instruments and powerful and lasting crushers are needful. Accordingly, the twelve cutting teeth of a horse are close-set and concentrated in the fore-part of its mouth, like so many adzes or chisels. The grinders or molars are large, and have an extremely complicated structure, being composed of a number of different substances of unequal hardness. The consequence of this is that they wear away at different rates; and, hence, the surface of each grinder is always as uneven as that of a good millstone.

I have said that the structure of the grinding teeth is very complicated, the harder and the softer parts being, as it were, interlaced with one another. The result of this is that, as the tooth wears,

the crown presents a peculiar pattern, the nature of which is not very easily deciphered at first; but which it is important we should understand clearly. Each grinding tooth of the upper jaw has an *outer wall* so shaped that, on the worn crown, it exhibits the form of two crescents, one in front and one behind, with their concave sides turned outwards. From the inner side of the front crescent, a crescentic *front ridge* passes inwards and backwards, and its inner face enlarges into a strong longitudinal fold or *pillar*. From the front part of the hinder crescent, a *back ridge* takes a like direction, and also has its *pillar*.

The deep interspaces or *valleys* between these ridges and the outer wall are filled by bony substance, which is called *cement*, and coats the whole tooth.

The pattern of the worn face of each grinding tooth of the lower jaw is quite different. It appears to be formed of two crescent-shaped ridges, the convexities of which are turned outwards. The free extremity of each crescent has a *pillar*, and there is a large double *pillar* where the two crescents meet. The whole structure is, as it were, imbedded in cement, which fills up the valleys, as in the upper grinders.

If the grinding faces of an upper and of a lower molar of the same side are applied together, it will be seen that the apposed ridges are nowhere parallel, but that they frequently cross; and that thus, in the act of mastication, a hard surface in the one is constantly applied to a soft surface in the other, and *vice versa*. They thus constitute a grinding apparatus of great efficiency, and one which is repaired as fast as it wears, owing to the long-continued growth of the teeth.

Some other peculiarities of the dentition of the horse must be noticed, as they bear upon what I shall have to say by and by. Thus the crowns of the cutting teeth have a peculiar deep pit, which gives rise to the well-known "mark" of the horse. There is a large

space between the outer incisors and the front grinder. In this space the adult male horse presents, near the incisors on each side, above and below, a canine or "tush," which is commonly absent in mares. In a young horse, moreover, there is not unfrequently to be seen in front of the first grinder, a very small tooth, which soon falls out. If this small tooth be counted as one, it will be found that there are seven teeth behind the canine on each side; namely, the small tooth in question, and the six great grinders, among which, by an unusual peculiarity, the foremost tooth is rather larger than those which follow it.

I have now enumerated those characteristic structures of the horse which are of most importance for the purpose we have in view.

To any one who is acquainted with the morphology of vertebrated animals, they show that the horse deviates widely from the general structure of mammals; and that the horse type is, in many respects, an extreme modification of the general mammalian plan. The least modified mammals, in fact, have the radius and ulna, the tibia and fibula, distinct and separate. They have five distinct and complete digits on each foot, and no one of these digits is very much larger than the rest. Moreover, in the least modified mammals, the total number of the teeth is very generally forty-four, while in horses, the usual number is forty, and in the absence of the canines, it may be reduced to thirty-six; the incisor teeth are devoid of the fold seen in those of the horse: the grinders regularly diminish in size from the middle of the series to its front end; while their crowns are short, early attain their full length, and exhibit simple ridges or tubercles, in place of the complex foldings of the horse's grinders.

Hence the general principles of the hypothesis of evolution lead to the conclusion that the horse must have been derived from some quadruped which possessed five complete digits on each foot; which had the bones of the fore-

arm and of the leg complete and separate; and which possessed forty-four teeth, among which the crowns of the incisors and grinders had a simple structure; while the latter gradually increased in size from before backwards, at any rate in the anterior part of the series, and had short crowns.

And if the horse has been thus evolved, and the remains of the different stages of its evolution have been preserved, they ought to present us with a series of forms in which the number of the digits becomes reduced; the bones of the fore-arm and leg gradually take on the equine condition; and the form and arrangement of the teeth successively approximate to those which obtain in existing horses.

Let us turn to the facts, and see how far they fulfil these requirements of the doctrine of evolution.

In Europe abundant remains of horses are found in the Quaternary and later Tertiary strata as far as the Pliocene formation. But these horses, which are so common in the cave-deposits and in the gravels of Europe, are in all essential respects like existing horses. And that is true of all the horses of the latter part of the Pliocene epoch. But, in deposits which belong to the earlier Pliocene and later Miocene epochs, and which occur in Britain, in France, in Germany, in Greece, in India, we find animals which are extremely like horses—which, in fact, are so similar to horses, that you may follow descriptions given in works upon the anatomy of the horse upon the skeletons of these animals—but which differ in some important particulars. For example, the structure of their fore and hind limbs is somewhat different. The bones which, in the horse, are represented by two splints, imperfect below, are as long as the middle metacarpal and metatarsal bones; and, attached to the extremity of each, is a digit with three joints of the same general character as those of the middle digit, only very much smaller. These small digits are so disposed that they could have had

but very little functional importance, and they must have been rather of the nature of the dew-claws, such as are to be found in many ruminant animals. The *Hipparion*, as the extinct European three-toed horse is called, in fact, presents a foot similar to that of the American *Protohippus* (Fig. 9), except that, in the *Hipparion*, the smaller digits are situated farther back, and are of smaller proportional size, than in the *Protohippus*.

The ulna is slightly more distinct than in the horse; and the whole length of it, as a very slender shaft, intimately united with the radius, is completely traceable. The fibula appears to be in the same condition as in the horse. The teeth of the *Hipparion* are essentially similar to those of the horse, but the pattern of the grinders is in some respects a little more complex, and there is a depression on the face of the skull in front of the orbit, which is not seen in existing horses.

In the earlier Miocene, and perhaps the later Eocene deposits of some parts of Europe, another extinct animal has been discovered, which Cuvier, who first described some fragments of it, considered to be a *Palæotherium*. But as further discoveries threw new light upon its structure, it was recognised as a distinct genus, under the name of *Anchitherium*.

In its general characters, the skeleton of *Anchitherium* is very similar to that of the horse. In fact, Lartet and De Blainville called it *Palæotherium equinum* or *hippoides*; and De Christol, in 1847, said that it differed from *Hipparion* in little more than the characters of its teeth, and gave it the name of *Hipparitherium*. Each foot possesses three complete toes; while the lateral toes are much larger in proportion to the middle toe than in *Hipparion*, and doubtless rested on the ground in ordinary locomotion.

The ulna is complete and quite distinct from the radius, though firmly united with the latter. The fibula seems also to have been complete. Its lower

end, though intimately united with that of the tibia, is clearly marked off from the latter bone.

There are forty-four teeth. The incisors have no strong pit. The canines seem to have been well developed in both sexes. The first of the seven grinders, which, as I have said, is frequently absent, and, when it does exist, is small in the horse, is a good-sized and permanent tooth, while the grinder which follows it is but little larger than the hinder ones. The crowns of the grinders are short, and though the fundamental pattern of the horse-tooth is discernible, the front and back ridges are less curved, the accessory pillars are wanting, and the valleys, much shallower, are not filled up with cement.

Seven years ago, when I happened to be looking critically into the bearing of palæontological facts upon the doctrine of evolution, it appeared to me that the *Anchitherium*, the *Hipparion*, and the modern horses, constitute a series in which the modifications of structure coincide with the order of chronological occurrence, in the manner in which they must coincide, if the modern horses really are the result of the gradual metamorphosis, in the course of the Tertiary epoch, of a less specialised ancestral form. And I found by correspondence with the late eminent French anatomist and palæontologist, M. Lartet, that he had arrived at the same conclusion from the same data.

That the *Anchitherium* type had become metamorphosed into the *Hipparion* type, and the latter into the *Equine* type, in the course of that period of time which is represented by the latter half of the Tertiary deposits, seemed to me to be the only explanation of the facts for which there was even a shadow of probability.¹

¹ I use the word "type" because it is highly probable that many forms of *Anchitherium*-like and *Hipparion*-like animals existed in the Miocene and Pliocene epochs, just as many species of the horse tribe exist now; and it is highly improbable that the particular species of *Anchitherium* or *Hipparion*, which happen to have been

And, hence, I have ever since held that these facts afford evidence of the occurrence of evolution, which, in the sense already defined, may be termed demonstrative.

All who have occupied themselves with the structure of *Anchitherium*, from Cuvier onwards, have acknowledged its many points of likeness to a well-known genus of extinct Eocene mammals, *Palæotherium*. Indeed, as we have seen, Cuvier regarded his remains of *Anchitherium* as those of a species of *Palæotherium*. Hence, in attempting to trace the pedigree of the horse beyond the Miocene epoch and the Anchitheroid form, I naturally sought among the various species of Palæotheroid animals for its nearest ally, and I was led to conclude that the *Palæotherium minus* (*Plagiolophus*) represented the next step more nearly than any form then known.

I think that this opinion was fully justifiable; but the progress of investigation has thrown an unexpected light on the question, and has brought us much nearer than could have been anticipated to a knowledge of the true series of the progenitors of the horse.

You are all aware that, when your country was first discovered by Europeans, there were no traces of the existence of the horse in any part of the American continent. The accounts of the conquest of Mexico dwell upon the astonishment of the natives of that country when they first became acquainted with that astounding phenomenon—a man seated upon a horse. Nevertheless, the investigations of American geologists have proved that the remains of horses occur in the most superficial deposits of both North and South America, just as they do in Europe. Therefore, for some reason or other—no feasible suggestion on that subject, so far as I know, has been made—the horse must have died out on this continent at some period preceding the

discovered, should be precisely those which have formed part of the direct line of the horse's pedigree.

discovery of America. Of late years there has been discovered in your Western Territories that marvellous accumulation of deposits, admirably adapted for the preservation of organic remains, to which I referred the other evening, and which furnishes us with a consecutive series of records of the fauna of the older half of the Tertiary epoch, for which we have no parallel in Europe. They have yielded fossils in an excellent state of conservation and in unexampled number and variety. The researches of Leidy and others have shown that forms allied to the *Hipparion* and the *Anchitherium* are to be found among these remains. But it is only recently that the admirably conceived and most thoroughly and patiently worked-out investigations of Professor Marsh have given us a just idea of the vast fossil wealth, and of the scientific importance, of these deposits. I have had the advantage of glancing over the collections in Yale Museum; and I can truly say that, so far as my knowledge extends, there is no collection from any one region and series of strata comparable, for extent, or for the care with which the remains have been got together, or for their scientific importance, to the series of fossils which he has deposited there. This vast collection has yielded evidence bearing upon the question of the pedigree of the horse of the most striking character. It tends to show that we must look to America, rather than to Europe, for the original seat of the equine series; and that the archaic forms and successive modifications of the horse's ancestry are far better preserved here than in Europe.

Professor Marsh's kindness has enabled me to put before you a diagram, every figure in which is an actual representation of some specimen which is to be seen at Yale at this present time (Fig. 9).

The succession of forms which he has brought together carries us from the top to the bottom of the Tertiaries. Firstly, there is the true horse. Next we have the American Pliocene form of the horse

(*Protohippus*); in the conformation of its limbs it presents some very slight deviations from the ordinary horse, and the crowns of the grinding teeth are shorter.

referred. But it is more valuable than the European *Hipparion*, for the reason that it is devoid of some of the peculiarities of that form—peculiarities which

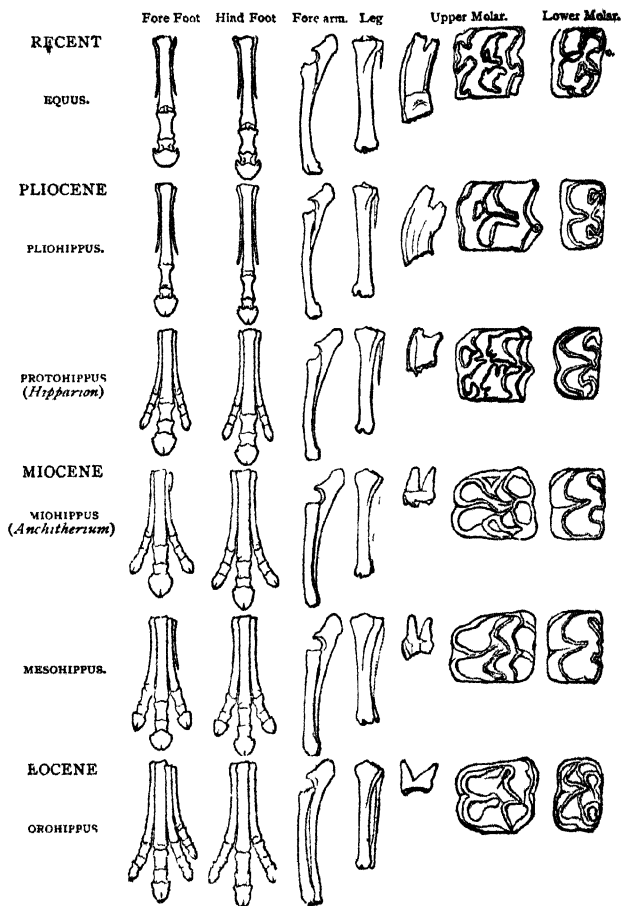


FIG. 9.

Then comes the *Protohippus*, which represents the European *Hipparion*, having one large digit and two small ones on each foot, and the general characters of the fore-arm and leg to which I have

tend to show that the European *Hipparion* is rather a member of a collateral branch, than a form in the direct line of succession. Next, in the backward order in time, is the *Miohippus*, which corre-

ends pretty nearly with the *Anchitherium* of Europe. It presents three complete toes—one large median and two smaller lateral ones; and there is a rudiment of that digit, which answers to the little finger of the human hand.

The European record of the pedigree of the horse stops here; in the American Tertiaries, on the contrary, the series of ancestral equine forms is continued into the Eocene formations. An older Miocene form, termed *Meshippus*, has three toes in front, with a large splint-like rudiment representing the little finger; and three toes behind. The radius and ulna, the tibia and the fibula, are distinct, and the short crowned molar teeth are anchitheroid in pattern.

But the most important discovery of all is the *Orohippus*, which comes from the Eocene formation, and is the oldest member of the equine series as yet known. Here we find four complete toes on the front limb, three toes on the hind-limb, a well-developed ulna, a well-developed fibula, and short-crowned grinders of simple pattern.

Thus, thanks to these important researches, it has become evident that, so far as our present knowledge extends, the history of the horse-type is exactly and precisely that which could have been predicted from a knowledge of the principles of evolution. And the knowledge we now possess justifies us completely in the anticipation, that when the still lower Eocene deposits, and those which belong to the cretaceous epoch, have yielded up their remains of ancestral equine animals, we shall find, first, a form with four complete toes, and a rudiment of the innermost or first digit in front, with probably a rudiment of the fifth digit in the hind foot; ¹ while, in still older forms, the series of the digits will be more and more complete, until we come

to the five-toed animals, in which, if the doctrine of evolution is well founded, the whole series must have taken its origin.

That is what I mean by demonstrative evidence of evolution. An inductive hypothesis is said to be demonstrated when the facts are shown to be in entire accordance with it. If that is not scientific proof, there are no merely inductive conclusions which can be said to be proved. And the doctrine of evolution, at the present time, rests upon exactly as secure a foundation as the Copernican theory of the motions of the heavenly bodies did at the time of its promulgation. Its logical basis is precisely of the same character—the coincidence of the observed facts with theoretical requirements.

The only way of escape, if it be a way of escape, from the conclusions which I have just indicated, is the supposition that all these different equine forms have been created separately at separate epochs of time; and, I repeat, that of such an hypothesis as this there neither is, nor can be, any scientific evidence; and, assuredly so far as I know, there is none which is supported, or pretends to be supported, by evidence or authority of any other kind. I can but think that the time will come when such suggestions as these, such obvious attempts to escape the force of demonstration, will be put upon the same footing as the supposition made by some writers, who are I believe not completely extinct at present, that fossils are mere simulacra, are no indications of the former existence of the animals to which they seem to belong; but that they are either sports of Nature, or special creations, intended—as I heard suggested the other day—to test our faith.

In fact, the whole evidence is in favour of evolution, and there is none against it. And I say this, although perfectly well aware of the seeming difficulties which have been built up upon what appears to the uninformed to be a solid foundation. I meet constantly

¹ Since this lecture was delivered, Professor Marsh has discovered a new genus of equine mammals (*Eohippus*) from the lowest Eocene deposits of the West, which corresponds very nearly to this description.—*American Journal of Science*, November, 1876.

with the argument that the doctrine of evolution cannot be well founded, because it requires the lapse of a very vast period of time ; while the duration of life upon the earth thus implied is inconsistent with the conclusions arrived at by the astronomer and the physicist. I may venture to say that I am familiar with those conclusions, inasmuch as some years ago, when President of the Geological Society of London, I took the liberty of criticising them, and of showing in what respects, as it appeared to me, they lacked complete and thorough demonstration. But, putting that point aside, suppose that, as the astronomers, or some of them, and some physical philosophers, tell us, it is impossible that life could have endured upon the earth for as long a period as is required by the doctrine of evolution—supposing that to be proved—I desire to be informed, what is the foundation for the statement that evolution does require so great a time? The biologist knows nothing whatever of the amount of time which may be required for the process of evolution. It is a matter of fact that the equine forms which I have described to you occur, in the order stated, in the Tertiary formations. But I have not the slightest means of guessing whether it took a million of years, or ten millions, or a hundred millions, or a thousand millions of years, to give rise to that series of changes. A biologist has no means of arriving at any conclusion as to the amount of time which may be needed for a certain quantity of organic change. He takes his time from the geologist. The geologist, considering the rate at which deposits are formed and the rate at which denudation goes on upon the surface of the earth, arrives at more or less justifiable conclusions as to the time which is required for the deposit of a certain thickness of rocks ; and if he tells me that the Tertiary formations required 500,000,000 years for their deposit, I suppose he has good ground for what he says, and I take that as a measure of the duration of the evolution of the horse

from the *Orohippus* up to its present condition. And, if he is right, undoubtedly evolution is a very slow process and requires a great deal of time. But suppose, now, that an astronomer or a physicist—for instance, my friend Sir William Thomson—tells me, that my geological authority is quite wrong ; and that he has weighty evidence to show that life could not possibly have existed upon the surface of the earth 500,000,000 years ago, because the earth would have then been too hot to allow of life, my reply is : “That is not my affair ; settle that with the geologist, and when you have come to an agreement among yourselves I will adopt your conclusion.” We take our time from the geologists and physicists ; and it is monstrous that having taken our time from the physical philosopher's clock, the physical philosopher should turn round upon us, and say we are too fast or too slow. What we desire to know is, is it a fact that evolution took place? As to the amount of time which evolution may have occupied, we are in the hands of the physicist and the astronomer, whose business it is to deal with those questions.

I have now, ladies and gentlemen, arrived at the conclusion of the task which I set before myself when I undertook to deliver these lectures. My purpose has been, not to enable those among you who have paid no attention to these subjects before, to leave this room in a condition to decide upon the validity or the invalidity of the hypothesis of evolution ; but I have desired to put before you the principles upon which all hypotheses respecting the history of Nature must be judged ; and furthermore, to make apparent the nature of the evidence and the amount of cogency which is to be expected and may be obtained from it. To this end, I have not hesitated to regard you as genuine students and persons desirous of knowing the truth. I have not shrunk from taking you through long discussions, that I fear may have sometimes

tried your patience ; and I have inflicted upon you details which were indispensable, but which may well have been wearisome. But I shall rejoice—I shall consider that I have done you the greatest service which it was in my power to do—if I have thus convinced

you that the great question which we have been discussing is not one to be dealt with by rhetorical flourishes, or by loose and superficial talk ; but that it requires the keen attention of the trained intellect and the patience of the accurate observer.

ON THE PHYSICAL BASIS OF LIFE

[1868]

IN order to make the title of this discourse generally intelligible, I have translated the term "Protoplasm," which is the scientific name of the substance of which I am about to speak, by the words "the physical basis of life." I suppose that, to many, the idea that there is such a thing as a physical basis, or matter, of life may be novel—so widely spread is the conception of life as a something which works through matter, but is independent of it ; and even those who are aware that matter and life are inseparably connected, may not be prepared for the conclusion plainly suggested by the phrase, "*the physical basis of matter of life*," that there is some one kind of matter which is common to all living beings, and that their endless diversities are bound together by a physical, as well as an ideal, unity. In fact, when first apprehended, such a doctrine as this appears almost shocking to common sense.

What, truly, can seem to be more obviously different from one another, in faculty, in form, and in substance, than the various kinds of living beings ? What community of faculty can there be between the brightly-coloured lichen, which so nearly resembles a mere mineral incrustation of the bare rock on which it grows, and the painter, to whom it is instinct with beauty, of the botanist, whom it feeds with knowledge ?

Again, think of the microscopic fungus—a mere infinitesimal ovoid particle,

which finds space and duration enough to multiply into countless millions in the body of a living fly ; and then of the wealth of foliage, the luxuriance of flower and fruit, which lies between this bald sketch of a plant and the giant pine of California, towering to the dimensions of a cathedral spire, or the Indian fig, which covers acres with its profound shadow, and endures while nations and empires come and go around its vast circumference. Or, turning to the other half of the world of life, picture to yourselves the great Finner whale, hugest of beasts that live, or have lived, disporting his eighty or ninety feet of bone, muscle, and blubber, with easy roll, among waves in which the stoutest ship that ever left dockyard would flounder hopelessly ; and contrast him with the invisible animalcules—mere gelatinous specks, multitudes of which could, in fact, dance upon the point of a needle with the same ease as the angels of the Schoolmen could, in imagination. With these images before your minds, you may well ask, what community of form, or structure, is there between the animalcule and the whale ; or between the fungus and the fig-tree ? And, *a fortiori*, between all four ?

Finally, if we regard substance, or material composition, what hidden bond can connect the flower which a girl wears in her hair and the blood which courses through her youthful veins ; or, what is there in common between the

dense and resisting mass of the oak, or the strong fabric of the tortoise, and those broad disks of glassy jelly which may be seen pulsating through the waters of a calm sea, but which drain away to mere films in the hand which raises them out of their element?

Such objections as these must, I think, arise in the mind of every one who ponders, for the first time, upon the conception of a single physical basis of life underlying all the diversities of vital existence; but I propose to demonstrate to you that, notwithstanding these apparent difficulties, a threefold unity—namely, a unity of power or faculty, a unity of form, and a unity of substantial composition—does pervade the whole living world.

No very abstruse argumentation is needed, in the first place, to prove that the powers, or faculties, of all kinds of living matter, diverse as they may be in degree, are substantially similar in kind.

Goethe has condensed a survey of all powers of mankind into the well-known epigram:—

“Warum treibt sich das Volk so und schreit?

Es will sich ernähren

Kinder zeugen, und die nähren so gut es vermag.

* * * *

Weiter bringt es kein Mensch, stell’ er sich wie er auch will.”

In physiological language this means, that all the multifarious and complicated activities of man are comprehensible under three categories. Either they are immediately directed towards the maintenance and development of the body, or they effect transitory changes in the relative positions of parts of the body, or they tend towards the continuance of the species. Even those manifestations of intellect, of feeling, and of will, which we rightly name the higher faculties, are not excluded from this classification, inasmuch as to every one but the subject of them, they are known only as transitory changes in the relative positions of parts of the body. *Speech, gesture, and

every other form of human action are in the long run, resolvable into muscular contraction, and muscular contraction is but a transitory change in the relative positions of the parts of a muscle. But the scheme which is large enough to embrace the activities of the highest form of life, covers all those of the lower creatures. The lowest plant, or animalcule, feeds, grows, and reproduces its kind. In addition, all animals manifest those transitory changes of form which we class under irritability and contractility; and, it is more than probable, that when the vegetable world is thoroughly explored, we shall find all plants in possession of the same powers, at one time or other of their existence.

I am not now alluding to such phenomena, at once rare and conspicuous, as those exhibited by the leaflets of the sensitive plants, or the stamens of the barberry, but to much more widely spread, and at the same time, more subtle and hidden, manifestations of vegetable contractility. You are doubtless aware that the common nettle owes its stinging property to the innumerable stiff and needle-like, though exquisitely delicate, hairs which cover its surface. Each stinging-needle tapers from a broad base to a slender summit, which, though rounded at the end, is of such microscopic fineness that it readily penetrates, and breaks off in, the skin. The whole hair consists of a very delicate outer case of wood, closely applied to the inner surface of which is a layer of semi-fluid matter, full of innumerable granules of extreme minuteness. This semi-fluid lining is protoplasm, which thus constitutes a kind of bag, full of a limpid liquid, and roughly corresponding in form with the interior of the hair which it fills. When viewed with a sufficiently high magnifying power, the protoplasmic layer of the nettle hair is seen to be in a condition of unceasing activity. Local contractions of the whole thickness of its substance pass slowly and gradually from point to point, and give rise to the appearance of pro-

passive waves, just as the bending of successive stalks of corn by a breeze produces the apparent billows of a corn-field.

But, in addition to these movements, and independently of them, the granules are driven, in relatively rapid streams, through channels in the protoplasm which seem to have a considerable amount of persistence. Most commonly, the currents in adjacent parts of the protoplasm take similar directions; and, thus, there is a general stream up one side of the hair and down the other. But this does not prevent the existence of partial currents which take different routes; and sometimes trains of granules may be seen coursing swiftly in opposite directions within a twenty-thousandth of an inch of one another; while, occasionally, opposite streams come into direct collision, and, after a longer or shorter struggle, one predominates. The cause of these currents seems to lie in contractions of the protoplasm which bounds the channels in which they flow, but which are so minute that the best microscopes show only their effects, and not themselves.

The spectacle afforded by the wonderful energies prisoned within the compass of the microscopic hair of a plant, which we commonly regard as a merely passive organism, is not easily forgotten by one who has watched its display, continued hour after hour, without pause or sign of weakening. The possible complexity of many other organic forms, seemingly as simple as the protoplasm of the nettle, dawns upon one; and the comparison of such a protoplasm to a body with an internal circulation, which has been put forward by an eminent physiologist, loses much of its startling character. Currents similar to those of the hairs of the nettle have been observed in a great multitude of very different plants, and weighty authorities have suggested that they probably occur, in more or less perfection, in all young vegetable cells. If such be the case, the wonderful noonday silence of a tropical forest is, after all,

due only to the dulness of our hearing; and could our ears catch the murmur of these tiny Maelstroms, as they whirl in the innumerable myriads of living cells which constitute each tree, we should be stunned, as with the roar of a great city.

Among the lower plants, it is the rule rather than the exception, that contractility should be still more openly manifested at some periods of their existence. The protoplasm of *Algae* and *Fungi* becomes, under many circumstances, partially, or completely, freed from its woody case, and exhibits movements of its whole mass, or is propelled by the contractility of one, or more, hair-like prolongations of its body, which are called vibratile cilia. And, so far as the conditions of the manifestation of the phenomena of contractility have yet been studied, they are the same for the plant as for the animal. Heat and electric shocks influence both, and in the same way, though it may be in different degrees. It is by no means my intention to suggest that there is no difference in faculty between the lowest plant and the highest, or between plants and animals. But the difference between the powers of the lowest plant, or animal, and those of the highest, is one of degree, not of kind, and depends, as Milne-Edwards long ago so well pointed out, upon the extent to which the principle of the division of labour is carried out in the living economy. In the lowest organism all parts are competent to perform all functions, and one and the same portion of protoplasm may successfully take on the function of feeding, moving, or reproducing apparatus. In the highest, on the contrary, a great number of parts combine to perform each function, each part doing its allotted share of the work with great accuracy and efficiency, but being useless for any other purpose.

On the other hand, notwithstanding all the fundamental resemblances which exist between the powers of the protoplasm in plants and in animals, they present a striking difference (to which I

shall advert more at length presently), in the fact that plants can manufacture fresh protoplasm out of mineral compounds, whereas animals are obliged to procure it ready made, and hence, in the long run, depend upon plants. Upon what condition this difference in the powers of the two great divisions of the world of life depends, nothing is at present known.

With such qualification as arises out of the last-mentioned fact, it may be truly said that the acts of all living things are fundamentally one. Is any such unity predicable of their forms? Let us seek in easily verified facts for a reply to this question. If a drop of blood be drawn by pricking one's finger, and viewed with proper precautions, and under a sufficiently high microscopic power, there will be seen, among the innumerable multitude of little, circular, discoidal bodies, or corpuscles, which float in it and give it its colour, a comparatively small number of colourless corpuscles, of somewhat larger size and very irregular shape. If the drop of blood be kept at the temperature of the body, these colourless corpuscles will be seen to exhibit a marvellous activity, changing their forms with great rapidity, drawing in and thrusting out prolongations of their substance, and creeping about as if they were independent organisms.

The substance which is thus active is a mass of protoplasm, and its activity differs in detail, rather than in principle, from that of the protoplasm of the nettle. Under sundry circumstances the corpuscle dies and becomes distended into a round mass, in the midst of which is seen a smaller spherical body, which existed, but was more or less hidden, in the living corpuscle, and is called its *nucleus*. Corpuscles of essentially similar structure are to be found in the skin, in the lining of the mouth, and scattered through the whole framework of the body. Nay, more; in the earliest condition of the human organism, in that state in which it has but just become distinguishable from the egg in which it

arises, it is nothing but an aggregation of such corpuscles, and every organ of the body was, once, no more than such an aggregation.

Thus a nucleated mass of protoplasm turns out to be what may be termed the structural unit of the human body. As a matter of fact, the body, in its earliest state, is a mere multiple of such units; and in its perfect condition, it is a multiple of such units, variously modified.

But does the formula which expresses the essential structural character of the highest animal cover all the rest, as the statement of its powers and faculties covered that of all others? Very nearly. Beast and fowl, reptile and fish, mollusk, worm, and polype, are all composed of structural units of the same character, namely, masses of protoplasm with a nucleus. There are sundry very low animals, each of which, structurally, is a mere colourless blood-corpuscle, leading an independent life. But at the very bottom of the animal scale, even this simplicity becomes simplified, and all the phenomena of life are manifested by a particle of protoplasm without a nucleus. Nor are such organisms insignificant by reason of their want of complexity. It is a fair question whether the protoplasm of those simplest forms of life, which people an immense extent of the bottom of the sea, would not outweigh that of all the higher living beings which inhabit the land put together. And in ancient times, no less than at the present day, such living beings as these have been the greatest of rock builders.

What has been said of the animal world is no less true of plants. Embedded in the protoplasm at the broad, or attached, end of the nettle hair, there lies a spheroidal nucleus. Careful examination further proves that the whole substance of the nettle is made up of a repetition of such masses of nucleated protoplasm, each contained in a wooden case, which is modified in form, sometimes into a woody fibre, sometimes into a duct or spiral vessel, sometimes into a

pollen grain, or an ovule. Traced back to its earliest state, the nettle arises as the man does, in a particle of nucleated protoplasm. And in the lowest plants, as in the lowest animals, a single mass of such protoplasm may constitute the whole plant, or the protoplasm may exist without a nucleus.

Under these circumstances it may well be asked, how is one mass of non-nucleated protoplasm to be distinguished from another? why call one "plant" and the other "animal"?

The only reply is that, so far as form is concerned, plants and animals are not separable, and that, in many cases, it is a mere matter of convention whether we call a given organism an animal or a plant. There is a living body called *Æthalion septicum*, which appears upon decaying vegetable substances, and, in one of its forms, is common upon the surfaces of tan-pits. In this condition it is, to all intents and purposes, a fungus, and formerly was always regarded as such; but the remarkable investigations of De Bary have shown that, in another condition, the *Æthalion* is an actively locomotive creature, and takes in solid matters, upon which, apparently, it feeds, thus exhibiting the most characteristic feature of animality. Is this a plant; or is it an animal? Is it both; or is it neither? Some decide in favour of the last supposition, and establish an intermediate kingdom, a sort of biological No Man's Land for all these questionable forms. But, as it is admittedly impossible to draw any distinct boundary line between this no man's land and the vegetable world, on the one hand, or the animal, on the other, it appears to me that this proceeding merely doubles the difficulty which, before, was single.

Protoplasm, simple or nucleated, is the formal basis of all life. It is the clay of the potter: which, bake it and paint it as he will, remains clay, separated by artifice, and not by nature, from the commonest brick or sun-dried clod.

Thus it becomes clear that all living powers are cognate, and that all living

forms are fundamentally of one character. The researches of the chemist have revealed a no less striking uniformity of material composition in living matter.

In perfect strictness, it is true that chemical investigation can tell us little or nothing, directly, of the composition of living matter, inasmuch as such matter must needs die in the act of analysis,—and upon this very obvious ground, objections, which I confess seem to me to be somewhat frivolous, have been raised to the drawing of any conclusions whatever respecting the composition of actually living matter, from that of the dead matter of life, which alone is accessible to us. But objectors of this class do not seem to reflect that it is also, in strictness, true that we know nothing about the composition of any body whatever, as it is. The statement that a crystal of calc-spar consists of carbonate of lime, is quite true, if we only mean that, by appropriate processes, it may be resolved into carbonic acid and quicklime. If you pass the same carbonic acid over the very quicklime thus obtained, you will obtain carbonate of lime again; but it will not be calc-spar, nor anything like it. Can it, therefore, be said that chemical analysis teaches nothing about the chemical composition of calc-spar? Such a statement would be absurd; but it is hardly more so than the talk one occasionally hears about the uselessness of applying the results of chemical analysis to the living bodies which have yielded them.

One fact, at any rate, is out of reach of such refinements, and this is, that all the forms of protoplasm which have yet been examined contain the four elements, carbon, hydrogen, oxygen, and nitrogen, in very complex union, and that they behave similarly towards several reagents. To this complex combination, the nature of which has never been determined with exactness, the name of Protein has been applied. And if we use this term with such caution as may properly arise out of our comparative ignorance of the things for which it

stands, it may be truly said, that all protoplasm is proteinaceous, or, as the white, or albumen, of an egg is one of the commonest examples of a nearly pure proteine matter, we may say that all living matter is more or less albuminoid.

Perhaps it would not yet be safe to say that all forms of protoplasm are affected by the direct action of electric shocks; and yet the number of cases in which the contraction of protoplasm is shown to be affected by this agency increases every day.

Nor can it be affirmed with perfect confidence, that all forms of protoplasm are liable to undergo that peculiar coagulation at a temperature of 40° — 50° centigrade, which has been called "heat-stiffening," though Kühne's beautiful researches have proved this occurrence to take place in so many and such diverse living beings, that it is hardly rash to expect that the law holds good for all.

Enough has, perhaps, been said to prove the existence of a general uniformity in the character of the protoplasm, or physical basis, of life, in whatever group of living beings it may be studied. But it will be understood that this general uniformity by no means excludes any amount of special modifications of the fundamental substance. The mineral, carbonate of lime, assumes an immense diversity of characters, though no one doubts that, under all these Protean changes, it is one and the same thing.

And now, what is the ultimate fate, and what the origin, of the matter of life?

Is it, as some of the older naturalists supposed, diffused throughout the universe in molecules, which are indestructible and unchangeable in themselves; but, in endless transmigration, unite in innumerable permutations, into the diversified forms of life we know? Or, is the matter of life composed of ordinary matter, differing from it only in the manner in which its atoms are aggregated? Is it built up of ordinary

matter, and again resolved into ordinary matter when its work is done?

Modern science does not hesitate a moment between these alternatives. Physiology writes over the portals of life—

"Debemur morti nos nostraque,"

with a profounder meaning than the Roman poet attached to that melancholy line. Under whatever disguise it takes refuge, whether fungus or oak, worm or man, the living protoplasm not only ultimately dies and is resolved into its mineral and lifeless constituents, but is always dying, and, strange as the paradox may sound, could not live unless it died.

In the wonderful story of the "*Peau de Chagrin*," the hero becomes possessed of a magical wild ass' skin, which yields him the means of gratifying all his wishes. But its surface represents the duration of the proprietor's life; and for every satisfied desire the skin shrinks in proportion to the intensity of fruition, until at length life and the last hand-breadth of the *peau de chagrin*, disappear with the gratification of a last wish.

Balzac's studies had led him over a wide range of thought and speculation, and his shadowing forth of physiological truth in this strange story may have been intentional. At any rate, the matter of life is a veritable *peau de chagrin*, and for every vital act it is somewhat the smaller. All work implies waste, and the work of life results, directly or indirectly, in the waste of protoplasm.

Every word uttered by a speaker costs him some physical loss; and, in the strictest sense, he burns that others may have light—so much eloquence, so much of his body resolved into carbonic acid, water, and urea. It is clear that this process of expenditure cannot go on for ever. But, happily, the protoplasmic *peau de chagrin* differs from Balzac's in its capacity of being repaired, and brought back to its full size, after every exertion.

For example, this present lecture, whatever its intellectual worth to you, has a certain physical value to me, which is, conceivably, expressible by the number of grains of protoplasm and other bodily substance wasted in maintaining my vital processes during its delivery. My *peau de chagrin* will be distinctly smaller at the end of the discourse than it was at the beginning. By and by, I shall probably have recourse to the substance commonly called mutton, for the purpose of stretching it back to its original size. Now this mutton was once the living protoplasm, more or less modified, of another animal—a sheep. As I shall eat it, it is the same matter altered, not only by death, but by exposure to sundry artificial operations in the process of cooking.

But these changes, whatever be their extent, have not rendered it incompetent to resume its old functions as matter of life. A singular inward laboratory, which I possess, will dissolve a certain portion of the modified protoplasm; the solution so formed will pass into my veins; and the subtle influences to which it will then be subjected will convert the dead protoplasm into living protoplasm, and transubstantiate sheep into man.

Nor is this all. If digestion were a thing to be trifled with, I might sup upon lobster, and the matter of life of the crustacean would undergo the same wonderful metamorphosis into humanity. And were I to return to my own place by sea, and undergo shipwreck, the crustacean might, and probably would, return the compliment, and demonstrate our common nature by turning my protoplasm into living lobster. Or, if nothing better were to be had, I might supply my wants with mere bread, and I should find the protoplasm of the wheat-plant to be convertible into man, with no more trouble than that of the sheep, and with far less, I fancy, than that of the lobster.

Hence it appears to be a matter of no great moment what animal, or what plant, I lay under contribution for

protoplasm, and the fact speaks volumes for the general identity of that substance in all living beings. I share this catholicity of assimilation with other animals, all of which, so far as we know, could thrive equally well on the protoplasm of any of their fellows, of any plant; but here the assimilative powers of the animal world cease. A solution of smelling-salts in water, with an infinitesimal proportion of some other saline matters, contains all the elementary bodies which enter into the composition of protoplasm; but, as I need hardly say, a hogshead of that fluid would not keep a hungry man from starving, nor would it save any animal whatever from a like fate. An animal cannot make protoplasm, but must take it ready-made from some other animal, or some plant—the animal's highest feat of constructive chemistry being to convert dead protoplasm into that living matter of life which is appropriate to itself.

Therefore, in seeking for the origin of protoplasm, we must eventually turn to the vegetable world. A fluid containing carbonic acid, water, and nitrogenous salts, which offers such a Barmecide feast to the animal, is a table richly spread to multitudes of plants; and, with a due supply of only such materials, many a plant will not only maintain itself in vigour, but grow and multiply until it has increased a million-fold, or a million million-fold, the quantity of protoplasm which it originally possessed; in this way building up the matter of life, to an indefinite extent, from the common matter of the universe.

Thus, the animal can only raise the complex substance of dead protoplasm to the higher power, as one may say, of living protoplasm; while the plant can raise the less complex substances—carbonic acid, water, and nitrogenous salts—to the same stage of living protoplasm, if not to the same level. But the plant also has its limitations. Some of the fungi, for example, appear to need higher compounds to start with; and no known plant can live

upon the uncompound elements of protoplasm. A plant supplied with pure carbon, hydrogen, oxygen, and nitrogen, phosphorus, sulphur, and the like, would as infallibly die as the animal in his bath of smelling-salts, though it would be surrounded by all the constituents of protoplasm. Nor, indeed, need the process of simplification of vegetable food be carried so far as this, in order to arrive at the limit of the plant's thaumaturgy. Let water, carbonic acid, and all the other needful constituents be supplied except nitrogenous salts, and an ordinary plant will still be unable to manufacture protoplasm.

Thus the matter of life, so far as we know it (and we have no right to speculate on any other), breaks up, in consequence of that continual death which is the condition of its manifesting vitality, into carbonic acid, water, and nitrogenous compounds, which certainly possess no properties but those of ordinary matter. And out of these same forms of ordinary matter, and from none which are simpler, the vegetable world builds up all the protoplasm which keeps the animal world a-going. Plants are the accumulators of the power which animals distribute and disperse.

But it will be observed, that the existence of the matter of life depends on the pre-existence of certain compounds; namely, carbonic acid, water, and certain nitrogenous bodies. Withdraw any one of these three from the world, and all vital phenomena come to an end. They are as necessary to the protoplasm of the plant as the protoplasm of the plant is to that of the animal. Carbon, hydrogen, oxygen, and nitrogen are all lifeless bodies. Of these, carbon and oxygen unite in certain proportions and under certain conditions, to give rise to carbonic acid; hydrogen and oxygen produce water; nitrogen and other elements give rise to nitrogenous salts. These new compounds, like the elementary bodies of which they are composed, are lifeless. But when they are brought together, under certain con-

ditions, they give rise to the still more complex body, protoplasm, and this protoplasm exhibits the phenomena of life.

I see no break in this series of steps in molecular complication, and I am unable to understand why the language which is applicable to any one term of the series may not be used to any of the others. We think fit to call different kinds of matter carbon, oxygen, hydrogen, and nitrogen, and to speak of the various powers and activities of these substances as the properties of the matter of which they are composed.

When hydrogen and oxygen are mixed in a certain proportion, and an electric spark is passed through them, they disappear, and a quantity of water, equal in weight to the sum of their weights, appears in their place. There is not the slightest parity between the passive and active powers of the water and those of the oxygen and hydrogen which have given rise to it. At 32° Fahrenheit, and far below that temperature, oxygen and hydrogen are elastic gaseous bodies, whose particles tend to rush away from one another with great force. Water, at the same temperature, is a strong though brittle solid, whose particles tend to cohere into definite geometrical shapes, and sometimes build up frosty imitations of the most complex forms of vegetable foliage.

Nevertheless we call these, and many other strange phenomena, the properties of the water, and we do not hesitate to believe that, in some way or another, they result from the properties of the component elements of the water. We do not assume that a something called "aquosity" entered into and took possession of the oxidated hydrogen as soon as it was formed, and then guided the aqueous particles to their places in the facets of the crystal, or amongst the leaflets of the hoar frost. On the contrary, we live in the hope and in the faith that, by the advance of molecular physics, we shall by and by be able to see our way as clearly from the constituents of water to the properties of water, as we are now able to deduce the operations of

a watch from the form of its parts and the manner in which they are put together.

Is the case in any way changed when carbonic acid, water, and nitrogenous salts disappear, and in their place, under the influence of pre-existing living protoplasm, an equivalent weight of the matter of life makes its appearance?

It is true that there is no sort of parity between the properties of the components and the properties of the resultant, but neither was there in the case of the water. It is also true that what I have spoken of as the influence of pre-existing living matter is something quite unintelligible; but does anybody quite comprehend the *modus operandi* of an electric spark, which traverses a mixture of oxygen and hydrogen?

What justification is there, then, for the assumption of the existence in the living matter of a something which has no representative, or correlative, in the not living matter which gave rise to it? What better philosophical status has "vitality" than "aquosity"? And why should "vitality" hope for a better fate than the other "itys" which have disappeared since Martinus Scriblerus accounted for the operation of the meat-jack by its inherent "meat-roasting quality," and scorned the "materialism" of those who explained the turning of the spit by a certain mechanism worked by the draught of the chimney.

If scientific language is to possess a definite and constant signification whenever it is employed, it seems to me that we are logically bound to apply to the protoplasm, or physical basis of life, the same conceptions as those which are held to be legitimate elsewhere. If the phenomena exhibited by water are its properties, so are those presented by protoplasm, living or dead, its properties.

If the properties of water may be properly said to result from the nature and disposition of its component molecules, I can find no intelligible ground for refusing to say that the properties of

protoplasm result from the nature and disposition of its molecules.

But I bid you beware that, in accepting these conclusions, you are placing your feet on the first rung of a ladder which, in most people's estimation, is the reverse of Jacob's, and leads to the antipodes of heaven. It may seem a small thing to admit that the dull vital actions of a fungus, or a foraminifer, are the properties of their protoplasm, and are the direct results of the nature of the matter of which they are composed. But if, as I have endeavoured to prove to you, their protoplasm is essentially identical with, and most readily converted into, that of any animal, I can discover no logical halting-place between the admission that such is the case, and the further concession that all vital action may, with equal propriety, be said to be the result of the molecular forces of the protoplasm which displays it. And if so, it must be true, in the same sense and to the same extent, that the thoughts to which I am now giving utterance, and your thoughts regarding them, are the expression of molecular changes in that matter of life which is the source of our other vital phenomena.

Past experience leads me to be tolerably certain that, when the propositions I have just placed before you are accessible to public comment and criticism, they will be condemned by many zealous persons, and perhaps by some few of the wise and thoughtful. I should not wonder if "gross and brutal materialism" were the mildest phrase applied to them in certain quarters. And, most undoubtedly, the terms of the propositions are distinctly materialistic. Nevertheless two things are certain; the one, that I hold the statements to be substantially true; the other, that I, individually, am no materialist, but, on the contrary, believe materialism to involve grave philosophical error.

This union of materialistic terminology with the repudiation of materialistic

philosophy I share with some of the most thoughtful men with whom I am acquainted. And, when I first undertook to deliver the present discourse, it appeared to me to be a fitting opportunity to explain how such a union is not only consistent with, but necessitated by, sound logic. I purposed to lead you through the territory of vital phænomena to the materialistic slough in which you find yourselves now plunged, and then to point out to you the sole path by which, in my judgment, extrication is possible.

An occurrence of which I was unaware until my arrival here last night renders this line of argument singularly opportune. I found in your papers the eloquent address "On the Limits of Philosophical Inquiry," which a distinguished prelate of the English Church delivered before the members of the Philosophical Institution on the previous day. My argument, also, turns upon this very point of the limits of philosophical inquiry; and I cannot bring out my own views better than by contrasting them with those so plainly and, in the main, fairly stated by the Archbishop of York.

But I may be permitted to make a preliminary comment upon an occurrence that greatly astonished me. Applying the name of the "New Philosophy" to that estimate of the limits of philosophical inquiry which I, in common with many other men of science, hold to be just, the Archbishop opens his address by identifying this "New Philosophy" with the Positive Philosophy of M. Comte (of whom he speaks as its "founder"); and then proceeds to attack that philosopher and his doctrines vigorously.

Now, so far as I am concerned, the most reverend prelate might dialectically hew M. Comte in pieces, as a modern Agag, and I should not attempt to stay his hand. In so far as my study of what specially characterises the Positive Philosophy has led me, I find therein little or nothing of any scientific value,

and a great deal which is as thoroughly antagonistic to the very essence of science as anything in ultramontane Catholicism. In fact, M. Comte's philosophy, in practice, might be compendiously described as Catholicism minus Christianity.

But what has Comtism to do with the "New Philosophy," as the Archbishop defines it in the following passage?

"Let me briefly remind you of the leading principles of this new philosophy.

"All knowledge is experience of facts acquired by the senses. The traditions of older philosophies have obscured our experience by mixing with it much that the senses cannot observe, and until these additions are discarded our knowledge is impure. Thus metaphysics tell us that one fact which we observe is a cause, and another is the effect of that cause; but, upon a rigid analysis, we find that our senses observe nothing of cause or effect: they observe, first, that one fact succeeds another, and, after some opportunity, that this fact has never failed to follow—that for cause and effect we should substitute invariable succession. An older philosophy teaches us to define an object by distinguishing its essential from its accidental qualities: but experience knows nothing of essential and accidental; she sees only that certain marks attach to an object, and, after many observations, that some of them attach invariably, whilst others may at times be absent. . . . As all knowledge is relative, the notion of anything being necessary must be banished with other traditions."

There is much here that expresses the spirit of the "New Philosophy," if by that term be meant the spirit of modern science; but I cannot but marvel that the assembled wisdom and learning of Edinburgh should have uttered no sign of dissent, when Comte was declared to be the founder of these doctrines. No one will accuse Scotchmen of habitually forgetting their great countrymen; but it was enough to make David Hume turn in his grave, that here, almost within ear-shot of his house, an instructed audience should have listened, without a murmur, while his most characteristic doctrines were attributed to a French writer of fifty years later date, in whose dreary and verbose pages we miss

¹ *The Limits of Philosophical Inquiry*, pp. 4 and 5.

like the vigour of thought and the exquisite clearness of style of the man whom I make bold to term the most acute thinker of the eighteenth century—even though that century produced Kant!

But I did not come to Scotland to vindicate the honour of one of the greatest men she has ever produced. My business is to point out to you that the only way of escape out of the "crass materialism" in which we just now landed, is the adoption and strict working-out of the very principles which the Archbishop holds up to reprobation.

Let us suppose that knowledge is absolute, and not relative, and therefore, that our conception of matter represents that which it really is. Let us suppose, further, that we do know more of cause and effect than a certain definite order of succession among facts, and that we have a knowledge of the necessity of that succession—and hence, of necessary laws—and I, for my part, do not see what escape there is from utter materialism and necessarianism. For it is obvious that our knowledge of what we call the material world is, to begin with, at least as certain and definite as that of the spiritual world, and that our acquaintance with law is of as old a date as our knowledge of spontaneity. Further, I take it to be demonstrable that it is utterly impossible to prove that anything whatever may not be the effect of a material and necessary cause, and that human logic is equally incompetent to prove that any act is really spontaneous. A really spontaneous act is one which, by the assumption, has no cause; and the attempt to prove such a negative as this is, on the face of the matter, absurd. And while it is thus a philosophical impossibility to demonstrate that any given phenomenon is not the effect of a material cause, any one who is acquainted with the history of science will admit, that its progress has, in all ages, meant, and now, more than ever, means, the extension of the province of what we call matter and causation, and the

concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity.

I have endeavoured, in the first part of this discourse, to give you a conception of the direction towards which modern physiology is tending; and I ask you, what is the difference between the conception of life as the product of a certain disposition of material molecules, and the old notion of an Archæus governing and directing blind matter within each living body, except this—that here, as elsewhere, matter and law have devoured spirit and spontaneity? And as surely as every future grows out of past and present, so will the physiology of the future gradually extend the realm of matter and law until it is co-extensive with knowledge, with feeling, and with action.

The consciousness of this great truth weighs like a nightmare, I believe, upon many of the best minds of these days. They watch what they conceive to be the progress of materialism, in such fear and powerless anger as a savage feels, when, during an eclipse, the great shadow creeps over the face of the sun. The advancing tide of matter threatens to drown their souls; the tightening grasp of law impedes their freedom; they are alarmed lest man's moral nature be debased by the increase of his wisdom.

If the "New Philosophy" be worthy of the reprobation with which it is visited, I confess their fears seem to me to be well founded. While, on the contrary, could David Hume be consulted, I think he would smile at their perplexities, and chide them for doing even as the heathen, and falling down in terror before the hideous idols their own hands have raised.

For, after all, what do we know of this terrible "matter," except as a name for the unknown and hypothetical cause of states of our own consciousness? And what do we know of that "spirit" over whose threatened extinction by matter a great lamentation is arising, like that which was heard at the death of Pan,

except that it is also a name for an unknown and hypothetical cause, or condition, of states of consciousness? In other words, matter and spirit are but names for the imaginary substrata of groups of natural phenomena.

And what is the dire necessity and "iron" law under which men groan? Truly, most gratuitously invented bugbears. I suppose if there be an "iron" law, it is that of gravitation; and if there be a physical necessity, it is that a stone, unsupported, must fall to the ground. But what is all we really know, and can know, about the latter phenomena? Simply, that, in all human experience, stones have fallen to the ground under these conditions; that we have not the smallest reason for believing that any stone so circumstanced will not fall to the ground; and that we have, on the contrary, every reason to believe that it will so fall. It is very convenient to indicate that all the conditions of belief have been fulfilled in this case, by calling the statement that unsupported stones will fall to the ground, "a law of Nature." But when, as commonly happens, we change *will* into *must*, we introduce an idea of necessity which most assuredly does not lie in the observed facts, and has no warranty that I can discover elsewhere. For my part, I utterly repudiate and inathematise the intruder. Fact I know; and Law I know; but what is this Necessity, save an empty shadow of my own mind's throwing?

But, if it is certain that we can have no knowledge of the nature of either matter or spirit, and that the notion of necessity is something illegitimately thrust into the perfectly legitimate conception of law, the materialistic position that there is nothing in the world but matter, force, and necessity, is as utterly devoid of justification as the most baseless of theological dogmas. The fundamental doctrines of materialism, like those of spiritualism, and most other 'isms,' lie outside "the limits of philosophical inquiry," and David Hume's

great service to humanity is his irrefragable demonstration of what these limits are. Hume called himself a sceptic, and therefore others cannot be blamed if they apply the same title to him; but that does not alter the fact that the name, with its existing implications, does him gross injustice.

If a man asks me what the politics of the inhabitants of the moon are, and I reply that I do not know; that neither I, nor any one else, has any means of knowing; and that, under these circumstances, I decline to trouble myself about the subject at all, I do not think he has any right to call me a sceptic. On the contrary, in replying thus, I conceive that I am simply honest and truthful, and show a proper regard for the economy of time. So Hume's strong and subtle intellect takes up a great many problems about which we are naturally curious, and shows us that they are essentially questions of lunar politics, in their essence incapable of being answered, and therefore not worth the attention of men who have work to do in the world. And he thus ends one of his essays:—

"If we take in hand any volume of Divinity, or school metaphysics, for instance, let us ask, *Does it contain any abstract reasoning concerning quantity or number?* No. *Does it contain any experimental reasoning concerning matter of fact and existence?* No. Commit it then to the flames; for it can contain nothing but sophistry and illusion."¹

Permit me to enforce this most wise advice. Why trouble ourselves about matters of which, however important they may be, we do know nothing, and can know nothing? We live in a world which is full of misery and ignorance, and the plain duty of each and all of us is to try to make the little corner he can influence somewhat less miserable and

¹ Hume's Essay, "Of the Academical or Sceptical Philosophy," in the *Inquiry concerning the Human Understanding*.—[Many critics of this passage seem to forget that the subject-matter of Ethics and Aesthetics consists of matters of fact and existence.—1892.]

somewhat less ignorant than it was before he entered it. To do this effectually it is necessary to be fully possessed of only two beliefs: the first, that the order of Nature is ascertainable by our faculties to an extent which is practically unlimited; the second, that our volition¹ counts for something as a condition of the course of events.

Each of these beliefs can be verified experimentally, as often as we like to try. Each, therefore, stands upon the strongest foundation upon which any belief can rest, and forms one of our highest truths. If we find that the ascertainment of the order of nature is facilitated by using one terminology, or one set of symbols, rather than another, it is our clear duty to use the former; and no harm can accrue, so long as we bear in mind, that we are dealing merely with terms and symbols.

In itself it is of little moment whether we express the phenomena of matter in terms of spirit; or the phenomena of spirit in terms of matter: matter may be regarded as a form of thought, thought may be regarded as a property of matter—each statement has a certain relative truth. But with a view to the progress of science, the materialistic terminology

¹ Or, to speak more accurately, the physical state of which volition is the expression.—[1892.]

is in every way to be preferred. For it connects thought with the other phenomena of the universe, and suggests inquiry into the nature of those physical conditions, or concomitants of thought, which are more or less accessible to us, and a knowledge of which may, in future, help us to exercise the same kind of control over the world of thought, as we already possess in respect of the material world; whereas, the alternative, or spiritualistic, terminology is utterly barren, and leads to nothing but obscurity and confusion of ideas.

Thus there can be little doubt, that the further science advances, the more extensively and consistently will all the phenomena of Nature be represented by materialistic formulæ and symbols.

But the man of science, who, forgetting the limits of philosophical inquiry, slides from these formulæ and symbols into what is commonly understood by materialism, seems to me to place himself on a level with the mathematician, who should mistake the *x*'s and *y*'s with which he works his problems, for real entities—and with this further disadvantage, as compared with the mathematician, that the blunders of the latter are of no practical consequence, while the errors of systematic materialism may paralyse the energies and destroy the beauty of a life.

NATURALISM AND SUPERNATURALISM

[FROM PROLOGUE TO CONTROVERTED QUESTIONS, 1892.]

THERE is a single problem with different aspects of which thinking men have been occupied, ever since they began seriously to consider the wonderful frame of things in which their lives are set, and to seek for trustworthy guidance among its intricacies.

Experience speedily taught them that the shifting scenes of the world's stage have a permanent background; that there is order amidst the seeming confusion, and that many events take place

according to unchanging rules. To this region of familiar steadiness and customary regularity they gave the name of Nature. But at the same time, their infantile and untutored reason, little more, as yet, than the playfellow of the imagination, led them to believe that this tangible, commonplace, orderly world of Nature was surrounded and interpenetrated, by another intangible and mysterious world, no more bound by fixed rules than, as they fancied, were

the thoughts and passions which coursed through their minds and seemed to exercise an intermittent and capricious rule over their bodies. They attributed to the entities, with which they peopled this dim and dreadful region, an unlimited amount of that power of modifying the course of events of which they themselves possessed a small share, and thus came to regard them as not merely beyond, but above, Nature.

Hence arose the conception of a "Supernature" antithetic to "Nature"—the primitive dualism of a natural world "fixed in fate" and a supernatural, left to the free play of volition—which has pervaded all later speculation, and, for thousands of years, has exercised a profound influence on practice. For it is obvious that, on this theory of the Universe, the successful conduct of life must demand careful attention to both worlds; and, if either is to be neglected, it may be safer that it should be Nature. In any given contingency, it must doubtless be desirable to know what may be expected to happen in the ordinary course of things; but it must be quite as necessary to have some inkling of the line likely to be taken by supernatural agencies able, and possibly willing, to suspend or reverse that course. Indeed, logically developed, the dualistic theory must needs end in almost exclusive attention to Supernature, and in trust that its over-ruling strength will be exerted in favour of those who stand well with its denizens. On the other hand, the lessons of the great school-master, experience, have hardly seemed to accord with this conclusion. They have taught, with considerable emphasis, that it does not answer to neglect Nature; and that, on the whole, the more attention paid to her dictates the better men fare.

Thus the theoretical antithesis brought about a practical antagonism. From the earliest times of which we have any knowledge, Naturalism, and Supernaturalism have consciously, or unconsciously, competed and struggled

with one another; and the varying fortunes of the contest are written in the records of the course of civilisation, from those of Egypt and Babylonia, six thousand years ago, down to those of our own time and people.

These records inform us that, so far as men have paid attention to Nature, they have been rewarded for their pains. They have developed the Arts which have furnished the conditions of civilised existence; and the Sciences, which have been a progressive revelation of reality, and have afforded the best discipline of the mind in the methods of discovering truth. They have accumulated a vast body of universally accepted knowledge; and the conceptions of man and of society, of morals and of law, based upon that knowledge, are every day more and more, either openly or tacitly, acknowledged to be the foundations of right action.

History also tells us that the field of the supernatural has rewarded its cultivators with a harvest, perhaps not less luxuriant, but of a different character. It has produced an almost infinite diversity of Religions. These, if we set aside the ethical concomitants upon which natural knowledge also has a claim, are composed of information about Supernature; they tell us of the attributes of supernatural beings, of their relations with Nature, and of the operations by which their interference with the ordinary course of events can be secured or averted. It does not appear, however, that supernaturalists have attained to any agreement about these matters or that history indicates a widening of the influence of supernaturalism on practice, with the onward flow of time. On the contrary, the various religions are, to a great extent, mutually exclusive; and their adherents delight in charging each other, not merely with error, but with criminality, deserving and ensuing punishment of infinite severity. In singular contrast with natural knowledge, again, the acquaintance of mankind with the super-

natural appears the more extensive and the more exact, and the influence of supernatural doctrines upon conduct the greater, the further back we go in time and the lower the stage of civilisation submitted to investigation. Historically, indeed, there would seem to be an inverse relation between supernatural and natural knowledge. As the latter has widened, gained in precision and in trustworthiness, so has the former shrunk, grown vague and questionable; as the one has more and more filled the sphere of action, so has the other retreated into the region of meditation, or vanished behind the screen of mere verbal recognition.

Whether this difference of the fortunes of Naturalism and of Supernaturalism is an indication of the progress, or of the regress, of humanity; of a fall from, or an advance towards, the higher life; is a matter of opinion. The point to which I wish to direct attention is that the difference exists and is making itself felt. Men are growing to be seriously alive to the fact that the historical evolution of humanity which is generally, and I venture to think not unreasonably, regarded as progress, has been, and is being, accompanied by a co-ordinate elimination of the supernatural from its originally large occupation of men's thoughts. The question—How far is this process to go?—is in my apprehension, the Controverted Question of our time.

Controversy on this matter—prolonged, bitter, and fought out with the weapons of the flesh, as well as with those of the spirit—is no new thing to Englishmen. We have been more or less occupied with it these five hundred years. And, during that time, we have made attempts to establish a *modus vivendi* between the antagonists, some of which have had a world-wide influence; though, unfortunately, none have proved universally and permanently satisfactory.

In the fourteenth century, the controverted question among us was, whether

certain portions of the Supernaturalism of mediæval Christianity were well-founded. John Wicliff proposed a solution of the problem which, in the course of the following two hundred years, acquired wide popularity and vast historical importance: Lollards, Hussites, Lutherans, Calvinists, Zwinglians, Socinians, and Anabaptists, whatever their disagreements, concurred in the proposal to reduce the Supernaturalism of Christianity within the limits sanctioned by the Scriptures. None of the chiefs of Protestantism called in question either the supernatural origin and infallible authority of the Bible, or the exactitude of the account of the supernatural world given in its pages. In fact, they could not afford to entertain any doubt about these points, since the infallible Bible was the fulcrum of the lever with which they were endeavouring to upset the Chair of St. Peter. The "freedom of private judgment" which they proclaimed, meant no more, in practice, than permission to themselves to make free with the public judgment of the Roman Church, in respect of the canon and of the meaning to be attached to the words of the canonical books. Private judgment—that is to say, reason—was (theoretically, at any rate) at liberty to decide what books were and what were not to take the rank of "Scripture"; and to determine the sense of any passage in such books. But this sense, once ascertained to the mind of the sectary, was to be taken for pure truth—for the very word of God. The controversial efficiency of the principle of biblical infallibility lay in the fact that the conservative adversaries of the Reformers were not in a position to contravene it without entangling themselves in serious difficulties; while, since both Papists and Protestants agreed in taking efficient measures to stop the mouths of any more radical critics, these did not count.

The impotence of their adversaries, however, did not remove the inherent weakness of the position of the Protest-

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ants. The dogma of the infallibility of the Bible is no more self-evident than is that of the infallibility of the Pope. If the former is held by "faith," then the latter may be. If the latter is to be accepted, or rejected, by private judgment, why not the former? Even if the Bible could be proved anywhere to assert its own infallibility, the value of that self-assertion to those who dispute the point is not obvious. On the other hand, if the infallibility of the Bible was rested on that of a "primitive Church," the admission that the "Church" was formerly infallible was awkward in the extreme for those who denied its present infallibility. Moreover, no sooner was the Protestant principle applied to practice, than it became evident that even an infallible text, when manipulated by private judgment, will impartially countenance contradictory deductions; and furnish forth creeds and confessions as diverse as the quality and the information of the intellects which exercise, and the prejudices and passions which sway, such judgments. Every sect, confident in the derivative infallibility of its wire-drawing of infallible materials, was ready to supply its contingent of martyrs; and to enable history, once more, to illustrate the truth, that steadfastness under persecution says much for the sincerity and still more for the tenacity, of the believer, but very little for the objective truth of that which he believes. No martyrs have sealed their faith with their blood more steadfastly than the Anabaptists.

Last, but not least, the Protestant principle contained within itself the germs of the destruction of the finality, which the Lutheran, Calvinistic, and other Protestant Churches fondly imagined they had reached. Since their creeds were professedly based on the canonical Scriptures, it followed that, in the long run, whoso settled the canon defined the creed. If the private judgment of Luther might legitimately conclude that the epistle of

James was contemptible, while the epistles of Paul contained the very essence of Christianity, it must be permissible for some other private judgment, on as good or as bad grounds, to reverse these conclusions; the critical process which excluded the Apocrypha could not be barred, at any rate by people who rejected the authority of the Church, from extending its operations to Daniel, the Canticles, and Ecclesiastes; nor, having got so far, was it easy to allege any good ground for staying the further progress of criticism. In fact, the logical development of Protestantism could not fail to lay the authority of the Scriptures at the feet of Reason; and in the hands of latitudinarian and rationalistic theologians, the despotism of the Bible was rapidly converted into an extremely limited monarchy. Treated with as much respect as ever, the sphere of its practical authority was minimised; and its decrees were valid only so far as they were countersigned by common sense, the responsible minister.

The champions of Protestantism are much given to glorify the Reformation of the sixteenth century as the emancipation of Reason; but it may be doubted if their contention has any solid ground; while there is a good deal of evidence to show, that aspirations after intellectual freedom had nothing whatever to do with the movement. Dante, who struck the Papacy as hard blows as Wicliff; Wicliff himself and Luther himself, when they began their work; were far enough from any intention of meddling with even the most irrational of the dogmas of mediæval Supernaturalism. From Wicliff to Socinus, or even to Münzer, Rothmann, and John of Leyden, I fail to find a trace of any desire to set reason free. The most that can be discovered is a proposal to change masters. From being the slave of the Papacy the intellect was to become the serf of the Bible; or, to speak more accurately, of somebody's interpretation of the Bible, which, rapidly shifting its attitude from the humility of

a private judgment to the arrogant Casaro-papistry of a state-enforced creed had no more hesitation about forcibly extinguishing opponent private judgments and judges, than had the old fashioned Pontiff-papistry.

It was the iniquities, and not the irrationalities, of the Papal system that lay at the bottom of the revolt of the laity; which was, essentially, an attempt to shake off the intolerable burden of certain practical deductions from a Supernaturalism in which everybody, in principle, acquiesced. What was the gain to intellectual freedom of abolishing transubstantiation, image worship, indulgences, ecclesiastical infallibility; if consubstantiation, real-unreal presence mystifications, the bibliolatry, the "inner-light" pretensions, and the demonology, which are fruits of the same supernaturalistic tree, remained in enjoyment of the spiritual and temporal support of a new infallibility? One does not free a prisoner by merely scraping away the rust from his shackles.

It will be asked, perhaps, was not the Reformation one of the products of that great outbreak of many sided free mental activity included under the general head of the Renaissance? Melancthon, Ulrich von Hutten, Beza, were they not all humanists? Was not the arch-humanist, Erasmus, fautor-in-chief of the Reformation, until he got frightened and basely deserted it?

From the language of Protestant historians, it would seem that they often forget that Reformation and Protestantism are by no means convertible terms. There were plenty of sincere and indeed zealous reformers, before, during, and after the birth and growth of Protestantism, who would have nothing to do with it. Assuredly, the rejuvenescence of science and of art; the widening of the field of Nature by geographical and astronomical discovery; the revelation of the noble ideals of antique literature by the revival of classical learning; the stir of thought, throughout all classes of society, by the

printers' work, loosened traditional bonds and weakened the hold of mediæval Supernaturalism. In the interests of liberal culture and of national welfare, the humanists were eager to lend a hand to anything which tended to the discomfiture of their sworn enemies, the monks, and they willingly supported every movement in the direction of weakening ecclesiastical interference with civil life. But the bond of a common enemy was the only real tie between the humanist and the protestant; their alliance was bound to be of short duration, and, sooner or later, to be replaced by internecine warfare. The goal of the humanists, whether they were aware of it or not, was the attainment of the complete intellectual freedom of the antique philosopher, than which nothing could be more abhorrent to a Luther, a Calvin, a Beza, or a Zwingli.

The key to the comprehension of the conduct of Erasmus, seems to me to lie in the clear apprehension of this fact. That he was a man of many weaknesses may be true; in fact, he was quite aware of them and professed himself no hero. But he never deserted that reformatory movement which he originally contemplated: and it was impossible he should have deserted the specifically Protestant reformation in which he never took part. He was essentially a theological whig, to whom radicalism was as hateful as it is to all whigs; or to borrow a still more appropriate comparison from modern times, a broad churchman who refused to enlist with either the High Church or the Low Church zealots, and paid the penalty of being called coward, time-server and traitor, by both. Yet really there is a good deal in his pathetic remonstrance that he does not see why he is bound to become a martyr for that in which he does not believe; and a fair consideration of the circumstances and the consequences of the Protestant reformation seems to me to go a long way towards justifying the course he adopted.

Few men had better means of being acquainted with the condition of Europe;

none could be more competent to gauge the intellectual shallowness and self-contradiction of the Protestant criticism of Catholic doctrine; and to estimate, at its proper value, the fond imagination that the waters let out by the Renaissance would come to rest amidst the blind alleys of the new ecclesiasticism. The bastard, whilom poor student and monk, become the familiar of bishops and princes, at home in all grades of society, could not fail to be aware of the gravity of the social position, of the dangers imminent from the profligacy and indifference of the ruling classes, no less than from the anarchical tendencies of the people who groaned under their oppression. The wanderer who had lived in Germany, in France, in England, in Italy, and who counted many of the best and most influential men in each country among his friends, was not likely to estimate wrongly the enormous forces which were still at the command of the Papacy. Bad as the churchmen might be, the statesmen were worse; and a person of far more sanguine temperament than Erasmus might have seen no hope for the future, except in gradually freeing the ubiquitous organisation of the Church from the corruptions which alone, as he imagined, prevented it from being as beneficent as it was powerful. The broad tolerance of the scholar and man of the world might well be revolted by the ruffianism, however genial, of one great light of Protestantism, and the narrow fanaticism, however learned and logical, of others, and to a cautious thinker, by whom, whatever his short-comings, the ethical ideal of the Christian evangel was sincerely prized, it really was a fair question whether it was worth while to bring about a political and social deluge, the end of which no mortal could foresee, for the purpose of setting up Lutheran, Zwinglian, and other Peterkins, in the place of the actual claimant to the reversion of the spiritual wealth of the Galilean fisherman.

Let us suppose that, at the beginning

of the Lutheran and Zwinglian movement, a vision of its immediate consequences had been granted to Erasmus; imagine that to the spectre of the fierce outbreak of Anabaptist communism which opened the apocalypse had succeeded, in shadowy procession, the reign of terror and of spoliation in England, with the judicial murders of his friends, More and Fisher; the bitter tyranny of evangelistic clericalism in Geneva and in Scotland; the long agony of religious wars, persecutions, and massacres, which devastated France and reduced Germany almost to savagery; finishing with the spectacle of Lutheranism in its native country sunk into mere dead Erastian formalism, before it was a century old; while Jesuitry triumphed over Protestantism in three-fourths of Europe, bringing in its train a recrudescence of all the corruptions Erasmus and his friends sought to abolish; might not he have quite honestly thought this a somewhat too heavy price to pay for Protestantism; more especially, since no one was in a better position than himself to know how little the dogmatic foundation of the new confessions was able to bear the light which the inevitable progress of humanistic criticism would throw upon them? As the wiser of his contemporaries saw, Erasmus was, at heart, neither Protestant nor Papist, but an "Independent Christian"; and, as the wiser of his modern biographers have discerned, he was the precursor, not of sixteenth century reform, but of eighteenth century "enlightenment"; a sort of broad-church Voltaire, who held by his "Independent Christianity" as stoutly as Voltaire by his Deism.

In fact, the stream of the Renaissance, which bore Erasmus along, left Protestantism stranded amidst the mudbanks of its articles and creeds: while its true course became visible to all men, two centuries later. By this time, those in whom the movement of the Renaissance was incarnate became aware what spirit they were of; and they attacked Supernaturalism in its Biblical stronghold.

defended by Protestants and Romanists with equal zeal. In the eyes of the "Patriarch," Ultramontanism, Jansenism, and Calvinism were merely three persons of the one "Infâme" which it was the object of his life to crush. If he hated one more than another, it was probably the last; while D'Holbach, and the extreme left of the free-thinking host, were disposed to show no more mercy to Deism and Pantheism.

The sceptical insurrection of the eighteenth century made a terrific noise and frightened not a few worthy people out of their wits; but cool judges might have foreseen, at the outset, that the efforts of the later rebels were no more likely than those of the earlier, to furnish permanent resting-places for the spirit of scientific inquiry. However worthy of admiration may be the acuteness, the common sense, the wit, the broad humanity, which abound in the writings of the best of the free-thinkers; there is rarely much to be said for their work as an example of the adequate treatment of a grave and difficult investigation. I do not think any impartial judge will assert that, from this point of view, they are much better than their adversaries. It must be admitted that they share to the full the fatal weakness of *a priori* philosophising, no less than the moral frivolity common to their age; while a singular want of appreciation of history, as the record of the moral and social evolution of the human race, permitted them to resort to preposterous theories of imposture, in order to account for the religious phenomena which are natural products of that evolution.

For the most part, the Romanist and Protestant adversaries of the free-thinkers met them with arguments no better than their own; and with vituperation, so far inferior that it lacked the wit. But one great Christian Apologist fairly captured the guns of the free-thinking array, and turned their batteries upon themselves. Speculative "infidelity" of the eighteenth century type was mortally wounded by the *Analogy*; while the

progress of the historical and psychological sciences brought to light the important part played by the mythopœic faculty; and, by demonstrating the extreme readiness of men to impose upon themselves, rendered the calling in of sacerdotal co-operation, in most cases, a superfluity.

Again, as in the fourteenth and the sixteenth centuries, social and political influences came into play. The free-thinking *philosophes*, who objected to Rousseau's sentimental religiosity almost as much as they did to *L'Infâme*, were credited with the responsibility for all the evil deeds of Rousseau's Jacobin disciples, with about as much justification as Wicliff was held responsible for the Peasants' revolt, or Luther for the *Bauern-krieg*. In England, though our *ancien régime* was not altogether lovely, the social edifice was never in such a bad way as in France; it was still capable of being repaired; and our forefathers, very wisely, preferred to wait until that operation could be safely performed, rather than pull it all down about their ears, in order to build a philosophically planned house on brand-new speculative foundations. Under these circumstances, it is not wonderful that, in this country, practical men preferred the Gospel of Wesley and Whitfield to that of Jean Jacques; while enough of the old heaven of Puritanism remained to ensure the favour and support of a large number of religious men to a revival of evangelical supernaturalism. Thus, by degrees, the free-thinking, or the indifference, prevalent among us in the first half of the eighteenth century, was replaced by a strong supernaturalistic reaction, which submerged the work of the free-thinkers; and even seemed, for a time, to have arrested the naturalistic movement of which that work was an imperfect indication. Yet, like Lollardy, four centuries earlier, free-thought merely took to running underground, safe, sooner or later, to return to the surface.

My memory, unfortunately, carries me

back to the fourth decade of the nineteenth century, when the evangelical flood had a little abated and the tops of certain mountains were soon to appear, chiefly in the neighbourhood of Oxford; but when, nevertheless, bibliolatry was rampant; when church and chapel alike proclaimed, as the oracles of God, the crude assumptions of the worst informed and, in natural sequence, the most presumptuously bigoted, of all theological schools.

In accordance with promises made on my behalf, but certainly without my authorisation, I was very early taken to hear "sermons in the vulgar tongue." And vulgar enough often was the tongue in which some preacher, ignorant alike of literature, of history, of science, and even of theology, outside that patronised by his own narrow school, poured forth, from the safe entrenchment of the pulpit, invectives against those who deviated from his notion of orthodoxy. From dark allusions to "sceptics" and "infidels," I became aware of the existence of people who trusted in carnal reason; who audaciously doubted that the world was made in six natural days, or that the deluge was universal; perhaps even went so far as to question the literal accuracy of the story of Eve's temptation, or of Balaam's ass; and, from the horror of the tones in which they were mentioned, I should have been justified in drawing the conclusion that these rash men belonged to the criminal classes. At the same time, those who were more directly responsible for providing me with the knowledge essential to the right guidance of life (and who sincerely desired to do so), imagined they were discharging that most sacred duty by impressing upon my childish mind the necessity, on pain of reprobation in this world and damnation in the next, of accepting, in the strict and literal sense, every statement contained in the Protestant Bible. I was told to believe, and I did believe, that doubt about any of them was a sin, not less reprehensible than a moral

delict. I suppose that, out of a thousand of my contemporaries, nine hundred, at least, had their minds systematically warped and poisoned, in the name of the God of truth, by like discipline. I am sure that, even a score of years later, those who ventured to question the exact historical accuracy of any part of the Old Testament and *a fortiori* of the Gospels, had to expect a pitiless shower of verbal missiles, to say nothing of the other disagreeable consequences which visit those who, in any way, run counter to that chaos of prejudices called public opinion.

My recollections of this time have recently been revived by the perusal of a remarkable document,¹ signed by as many as thirty-eight out of the twenty odd thousand clergymen of the Established Church. It does not appear that the signatories are officially accredited spokesmen of the ecclesiastical corporation to which they belong; but I feel bound to take their word for it, that they are "stewards of the Lord, who have received the Holy Ghost," and, therefore, to accept this memorial as evidence that, though the Evangelicism of my early days may be deposed from its place of power, though so many of the colleagues of the thirty-eight even repudiate the title of Protestants, yet the green bay tree of bibliolatry flourishes as it did sixty years ago. And, as in those good old times, whose refuses to offer incense to the idol is held to be guilty of "a dishonour to God," imperilling his salvation.

It is to the credit of the perspicacity of the memorialists that they discern the real nature of the Controverted Question of the age. They are awake to the unquestionable fact that, if Scripture has been discovered "not to be worthy of unquestioning belief," faith "in the supernatural itself" is, so far, undermined. And I may congratulate myself upon such weighty confirmation of an opinion in which I have had the fortune

¹ *Declaration on the Truth of Holy Scripture*, *The Times*, 18th December, 1891.

to anticipate them. But whether it is more to the credit of the courage, than to the intelligence, of the thirty-eight that they should go on to proclaim that the canonical scriptures of the Old and New Testaments "declare incontrovertibly the actual historical truth in all records, both of past events and of the delivery of predictions to be thereafter fulfilled," must be left to the coming generation to decide.

The interest which attaches to this singular document will, I think, be based by most thinking men, not upon what it is, but upon that of which it is a sign. It is an open secret, that the memorial is put forth as a counterblast to a manifestation of opinion of a contrary character, on the part of certain members of the same ecclesiastical body, who therefore have, as I suppose, an equal right to declare themselves "stewards of the Lord and recipients of the Holy Ghost." In fact, the stream of tendency towards Naturalism, the course of which I have briefly traced, has, of late years, flowed so strongly, that even the Churches have begun, I dare not say to drift, but, at any rate, to swing at their moorings. Within the pale of the Anglican establishment, I venture to doubt, whether, at this moment, there are as many thorough going defenders of "plenary inspiration" as there were timid questioners of that doctrine, half a century ago. Commentaries, sanctioned by the highest authority, give up the "actual historical truth" of the cosmogonical and diluvial narratives. University professors of deservedly high repute accept the critical decision that the Hexateuch is a compilation, in which the share of Moses, either as author or as editor, is not quite so clearly demonstrable as it might be; highly placed Divines tell us that the pre-Abrahamic Scripture narratives may be ignored; that the book of Daniel may be regarded as a patriotic romance of the second century B.C.; that the words of the writer of the fourth Gospel are not always to be distinguished from those

which he puts into the mouth of Jesus. Conservative, but conscientious, revisers decide that whole passages, some of dogmatic and some of ethical importance, are interpolations. An uneasy sense of the weakness of the dogma of Biblical infallibility seems to be at the bottom of a prevailing tendency once more to substitute the authority of the "Church" for that of the Bible. In my old age, it has happened to me to be taken to task for regarding Christianity as a "religion of a book" as gravely as, in my youth, I should have been reprehended for doubting that proposition. It is a no less interesting symptom that the State Church seems more and more anxious to repudiate all complicity with the principles of the Protestant Reformation and to call itself "Anglo-Catholic." Inspiration, deprived of its old intelligible sense, is watered down into a mystification. The Scriptures are, indeed, inspired; but they contain a wholly undefined and indefinable "human element"; and this unfortunate intruder is converted into a sort of biblical whipping-boy. Whatsoever scientific investigation, historical or physical, proves to be erroneous, the "human element" bears the blame: while the divine inspiration of such statements, as by their nature are out of reach of proof or disproof, is still asserted with all the vigour inspired by conscious safety from attack. Though the proposal to treat the Bible "like any other book" which caused so much scandal, forty years ago, may not yet be generally accepted, and though Bishop Colenso's criticisms may still lie, formally, under ecclesiastical ban, yet the Church has not wholly turned a deaf ear to the voice of the scientific tempter; and many a coy divine, while "crying I will ne'er consent," has consented to the proposals of that scientific criticism which the memorialists renounce and denounce.

A humble layman, to whom it would seem the height of presumption to assume even the unconsidered dignity

of a "steward of science," may well find this conflict of apparently equal ecclesiastical authorities perplexing—suggestive, indeed, of the wisdom of postponing attention to either, until the question of precedence between them is settled. And this course will probably appear the more advisable, the more closely the fundamental position of the memorialists is examined.

"No opinion of the fact or form of Divine Revelation, founded on literary criticism [and I suppose I may add historical, or physical, criticism] of the Scriptures themselves, can be admitted to interfere with the traditionary testimony of the Church, when that has been once ascertained and verified by appeal to antiquity."¹

Grant that it is "the traditionary testimony of the Church" which guarantees the canonicity of each and all of the books of the Old and New Testaments. Grant also that canonicity means infallibility; yet, according to the thirty-eight, this "traditionary testimony" has to be "ascertained and verified by appeal to antiquity." But "ascertainment and verification" are purely intellectual processes, which must be conducted according to the strict rules of scientific investigation, or be self-convicted of worthlessness. Moreover, before we can set about the appeal to "antiquity," the exact sense of that usefully vague term must be defined by similar means. "Antiquity" may include any number of centuries, great or small; and whether "antiquity" is to comprise the Council of Trent, or to stop a little beyond that of Nicæa, or to come to an end in the time of Irenæus, or in that of Justin Martyr, are knotty questions which can be decided, if at all, only by those critical methods which the signatories treat so cavalierly. And yet the decision of these questions is fundamental, for as the limits of the canonical scriptures vary, so may the dogmas deduced from them require modification. Christianity is one thing, if the fourth

Gospel, the Epistle to the Hebrews, the pastoral Epistles, and the Apocalypse are canonical and (by the hypothesis) infallibly true; and another thing, if they are not. As I have already said, whoso defines the canon defines the creed.

Now it is quite certain with respect to some of these books, such as the Apocalypse and the Epistle to the Hebrews, that the Eastern and the Western Church differed in opinion for centuries; and yet neither the one branch nor the other can have considered its judgment infallible, since they eventually agreed to a transaction by which each gave up its objection to the book patronised by the other. Moreover, the "fathers" argue (in a more or less rational manner) about the canonicity of this or that book, and are by no means above producing evidence, internal and external, in favour of the opinions they advocate. In fact, imperfect as their conceptions of scientific method may be, they not unfrequently used it to the best of their ability. Thus it would appear that though science, like Nature, may be driven out with a fork, ecclesiastical or other, yet she surely comes back again. The appeal to "antiquity" is, in fact, an appeal to science, first to define what antiquity is; secondly, to determine what "antiquity," so defined, says about canonicity; thirdly, to prove that canonicity means infallibility. And when science, largely in the shape of the abhorred "criticism," has answered this appeal, and has shown that "antiquity" used her own methods, however clumsily and imperfectly, she naturally turns round upon the appellants, and demands that they should show cause why, in these days, science should not resume the work the ancients did so imperfectly, and carry it out efficiently.

But no such cause can be shown. If "antiquity" permitted Eusebius, Origen, Tertullian, Irenæus, to argue for the reception of this book into the canon and the rejection of that, upon rational grounds, "antiquity" admitted the whole

¹ Declaration, Article 10.

principle of modern criticism. If Irenæus produces ridiculous reasons for limiting the Gospels to four, it was open to any one else to produce good reasons (if he had them) for cutting them down to three, or increasing them to five. If the Eastern branch of the Church had a right to reject the Apocalypse and accept the Epistle to the Hebrews, and the Western an equal right to accept the Apocalypse and reject the Epistle, down to the fourth century, any other branch would have an equal right, on cause shown, to reject both, or as the Catholic Church afterwards actually did, to accept both.

Thus I cannot but think that the thirty-eight are hoist with their own petard. Their "appeal to antiquity" turns out to be nothing but a round-about way of appealing to the tribunal the jurisdiction of which they affect to deny. Having rested the world of Christian supernaturalism on the elephant of biblical infallibility, and furnished the elephant with standing ground on the tortoise of "antiquity," they, like their famous Hindoo analogue, have been content to look no further; and have thereby been spared the horror of discovering that the tortoise rests on a grievously fragile construction, to a great extent the work of that very intellectual operation which they anathematise and repudiate.

Moreover, there is another point to be considered. It is of course true that a Christian Church (whether the Christian Church, or not, depends on the connotation of the definite article) existed before the Christian scriptures; and that the infallibility of these depends upon the infallibility of the judgment of the persons who selected the books of which they are composed, out of the mass of literature current among the early Christians. The logical acumen of Augustine showed him that the authority of the Gospel he preached must rest on that of the Church to which he belonged.¹

¹ Ego vero evangelio non crederem, nisi ecclesie Catholice me commoveret auctoritas.—*Contra Epistolam Manichæi*, cap. v.

But it is no less true that the Hebrew and the Septuagint versions of most, if not all, of the Old Testament books existed before the birth of Jesus of Nazareth; and that their divine authority is presupposed by, and therefore can hardly depend upon, the religious body constituted by his disciples. As everybody knows, the very conception of a "Christ" is purely Jewish. The validity of the argument from the Messianic prophecies vanishes unless their infallible authority is granted; and, as a matter of fact, whether we turn to the Gospels, the Epistles, or the writings of the early Apologists, the Jewish scriptures are recognised as the highest court of appeal of the Christian.

The proposal to cite Christian "antiquity" as a witness to the infallibility of the Old Testament, when its own claims to authority vanish, if certain propositions contained in the Old Testament are erroneous, hardly satisfies the requirements of lay logic. It is as if a claimant to be sole legatee, under another kind of testament, should offer his assertion as sufficient evidence of the validity of the will. And, even were not such a circular, or rather rotatory argument, that the infallibility of the Bible is testified by the infallible Church, whose infallibility is testified by the infallible Bible, too absurd for serious consideration, it remains permissible to ask, Where and when the Church, during the period of its infallibility, as limited by Anglican dogmatic necessities, has officially decreed the "actual historical truth of all records" in the Old Testament? Was Augustine heretical when he denied the actual historical truth of the record of the Creation? Father Suarez, standing on later Roman tradition, may have a right to declare that he was; but it does not lie, in the mouth of those who limit their appeal to that early "antiquity," in which Augustine played so great a part, to say so.

Among the watchers of the course of the world of thought, some view with

delight and some with horror, the crudescence of Supernaturalism which manifests itself among us, in shapes ranged along the whole flight of steps, which, in this case, separates the sublime from the ridiculous—from Neo-Catholicism and Inner-light mysticism, at the top, to unclean things, not worthy of mention in the same breath, at the bottom. In my poor opinion, the importance of these manifestations is often greatly over-estimated. The extant forms of Supernaturalism have deep roots in human nature, and will undoubtedly die hard; but, in these latter days, they have to cope with an enemy whose full strength is only just beginning to be put out, and whose forces, gathering strength year by year, are hemming them round on every side. This enemy is Science, in the acceptance of systematised natural knowledge, which, during the last two centuries, has extended those methods of investigation, the worth of which is confirmed by daily appeal to Nature, to every region in which the Supernatural has hitherto been recognised.

When scientific historical criticism reduced the annals of heroic Greece and of regal Rome to the level of fables; when the unity of authorship of the *Iliad* was successfully assailed by scientific literary criticism; when scientific physical criticism, after exploding the geocentric theory of the universe and reducing the solar system itself to one of millions of groups of like cosmic specks, circling at unimaginable distances from one another through infinite space, showed the supernaturalistic theories of the duration of the earth and of life upon it to be as inadequate as those of its relative dimensions and importance had been; it needed no prophetic gift to see that, sooner or later, the Jewish and the early Christian records would be treated in the same manner; that the authorship of the Hexateuch and of the Gospels would be as severely tested; and that the evidence in favour of the veracity of many of the statements found in the Scriptures would have to be strong

indeed if they were to be opposed to the conclusions of physical science. In point of fact, so far as I can discover, no one competent to judge of the evidential strength of these conclusions ventures now to say that the biblical accounts of the Creation and of the Deluge are true in the natural sense of the words of the narratives. The most modern Reconcilers venture upon is to affirm, that some quite different sense may be put upon the words; and that this non-natural sense may, with a little trouble, be manipulated into some sort of non-contradiction of scientific truth.

My purpose, in an essay¹ which treats of the narrative of the Deluge, was to prove, by physical criticism, that no such event as that described ever took place; to exhibit the untrustworthy character of the narrative demonstrated by literary criticism; and, finally, to account for its origin by producing a form of those ancient legends of pagan Chaldaea, from which the biblical compilation is manifestly derived. I have yet to learn that the main propositions of this essay can be seriously challenged.

In two essays² on the narrative of the Creation, I have endeavoured to controvert the assertion that modern science supports, either the interpretation put upon it by Mr. Gladstone, or any interpretation which is compatible with the general sense of the narrative, quite apart from particular details. The first chapter of Genesis teaches the supernatural creation of the present forms of life; modern science teaches that they have come about by evolution. The first chapter of Genesis teaches the successive origin—firstly, of all the plants; secondly, of all the aquatic and aerial animals; thirdly, of all the terrestrial animals, which now exist—during distinct intervals of time; modern science teaches that, throughout all the duration

¹ *Hasisadra's Adventure.*

² *The Interpreters of Genesis and the Interpreters of Nature and Mr. Gladstone and Genesis.*

of an immensely long past, so far as we have any adequate knowledge of it (that is as far back as the Silurian epoch), plants, aquatic, aerial, and terrestrial animals have co-existed; that the earliest known are unlike those which at present exist; and that the modern species have come into existence as the last terms of a series, the members of which have appeared one after another. Thus, far from confirming the account in Genesis, the results of modern science, so far as they go, are in principle, as in detail, hopelessly discordant with it.

Yet, if the pretensions to infallibility set up, not by the ancient Hebrew writings themselves, but by the ecclesiastical champions and friends from whom they may well pray to be delivered, thus shatter themselves against the rock of natural knowledge, in respect of the two most important of all events, the origin of things and the palingenesis of terrestrial life, what historical credit dare any serious thinker attach to the narratives of the fabrication of Eve, of the Fall, of the commerce between the *Bene Elohim* and the daughters of men, which lie between the creational and the diluvial legends? And, if these are to lose all historical worth, what becomes of the infallibility of those who, according to the later scriptures, have accepted them, argued from them, and staked far-reaching dogmatic conclusions upon their historical accuracy?

It is the merest ostrich policy for contemporary ecclesiasticism to try to hide its Hexateuchal head—in the hope that the inseparable connection of its body with pre-Abrahamic legends may be overlooked. The question will still be asked, If the first nine chapters of the Pentateuch are unhistorical, how is the historical accuracy of the remainder to be guaranteed? What more intrinsic claim has the story of the Exodus than that of the Deluge, to belief? If God did not walk in the Garden of Eden, how can we be assured that he spoke from Sinai?

In other essays ¹ I have endeavoured to show that sober and well-founded physical and literary criticism plays no less havoc with the doctrine that the canonical scriptures of the New Testament “declare incontrovertibly the actual historical truth in all records.” We are told that the Gospels contain a true revelation of the spiritual world—a proposition which, in one sense of the word “spiritual,” I should not think it necessary to dispute. But, when it is taken to signify that everything we are told about the world of spirits in these books is infallibly true; that we are bound to accept the demonology which constitutes an inseparable part of their teaching; and to profess belief in a Supernaturalism as gross as that of any primitive people—it is at any rate permissible to ask why? Science may be unable to define the limits of possibility, but it cannot escape from the moral obligation to weigh the evidence in favour of any alleged wonderful occurrence; and I have endeavoured to show that the evidence for the Gadarene miracle is altogether worthless. We have simply three, partially discrepant, versions of a story, about the primitive form, the origin, and the authority for which we know absolutely nothing. But the evidence in favour of the Gadarene miracle is as good as that for any other.

Elsewhere I have pointed out that it is utterly beside the mark to declaim against these conclusions on the ground of their asserted tendency to deprive mankind of the consolations of the Christian faith, and to destroy the foundations of morality: still less to brand them with the question-begging vituperative appellation of “infidelity.” The point is not whether they are wicked; but, whether, from the point of view of scientific method, they are irrefragably true. If they are they will

¹ *Agnosticism; The Value of Witness to the Miraculous; Agnosticism; a Rejoinder; Agnosticism and Christianity; The Keepers of the Herd of Swine; and Illustrations of Mr. Gladstone's Controversial Methods.*

be accepted in time, whether they are wicked or not wicked. Nature, so far as we have been able to attain to any insight into her ways, reck's little about consolation and makes for righteousness by very round-about paths. And, at any rate, whatever may be possible for other people, it is becoming less and less possible for the man who puts his faith in scientific methods of ascertaining truth, and is accustomed to have that faith justified by daily experience, to be consciously false to his principle in any matter. But the number of such men, driven into the use of scientific methods of inquiry and taught to trust them, by their education, their daily professional and business needs, is increasing and will continually increase. The phraseology of Supernaturalism may remain on men's lips, but in practice they are Naturalists. The magistrate who listens with devout attention to the precept "Thou shalt not suffer a witch to live" on Sunday, on Monday dismisses, as intrinsically absurd, a charge of bewitching a cow brought against some old woman; the superintendent of a lunatic asylum who substituted exorcism for rational modes of treatment would have but a short tenure of office; even parish clerks doubt the utility of prayers for rain, so long as the wind is in the east; and an outbreak of pestilence sends men, not to the churches, but to the drains. In spite of prayers for the success of our arms and *Te Deums* for victory, our real faith is in big battalions and keeping our powder dry; in knowledge of the science of warfare; in energy, courage, and discipline. In these, as in all other practical affairs, we act on the aphorism "*Laborare est orare*"; we admit that intelligent work is the only acceptable worship; and that, whether there be a Supernature or not, our business is with Nature.

It is important to note that the principle of the scientific Naturalism of the latter half of the nineteenth century, in which the intellectual movement of the Renaissance has culminated, and

which was first clearly formulated by Descartes, leads not to the denial of the existence of any Supernature;¹ but simply to the denial of the validity of the evidence adduced in favour of this, or of that, extant form of Supernaturalism.

Looking at the matter from the most rigidly scientific point of view, the assumption that, amidst the myriads of worlds scattered through endless space, there can be no intelligence as much greater than man's as his is greater than a blackbeetle's; no being endowed with powers of influencing the course of Nature as much greater than his as his is greater than a snail's, seems to me not merely baseless, but impertinent. Without stepping beyond the analogy of that which is known, it is easy to people the cosmos with entities, in ascending scale, until we reach something practically indistinguishable from omnipotence, omnipresence and omniscience. If our intelligence can, in some matters, surely reproduce the past of thousands of years ago and anticipate the future, thousands of years hence, it is clearly within the limits of possibility that some greater intellect, even of the same order, may be able to mirror the whole past and the whole future; if the universe is penetrated by a medium of such a nature that a magnetic needle on the earth answers to a commotion in the sun, an omnipresent agent is also conceivable; if our insignificant knowledge gives us some influence over events, practical omniscience may confer indefinitely greater power. Finally, if evidence that a thing may be were equivalent to proof that it is, analogy might justify the construction of a naturalistic theology and demonology not less wonderful than

¹ I employ the words "Supernature" and "Supernatural" in their popular senses. For myself, I am bound to say that the term "Nature" covers the totality of that which is. The world of psychical phenomena appears to me to be as much part of "Nature" as the world of physical phenomena; and I am unable to perceive any justification for cutting the Universe into two halves, one natural and one supernatural.

the current supernatural; just as it might justify the peopling of Mars, or of Jupiter, with living forms to which terrestrial biology offers no parallel. Until human life is longer and the duties of the present press less heavily, I do not think that wise men will occupy themselves with Jovian, or Martian, natural history; and they will probably agree to a verdict of "not proven" in respect of naturalistic theology, taking refuge in that agnostic confession, which appears to me to be

the only position for people who object to say that they know what they are quite aware they do not know. As to the interests of morality, I am disposed to think that if mankind could be got to act up to this last principle in every relation of life, a reformation would be effected such as the world has not yet seen; an approximation to the millennium, such as no supernaturalistic religion has ever yet succeeded, or seems likely ever to succeed, in effecting.

THE VALUE OF WITNESS TO THE MIRACULOUS

[1889]

CHARLES, or more properly, Karl, King of the Franks, consecrated Roman Emperor in St. Peter's on Christmas Day, A.D. 800, and known to posterity as the Great (chiefly by his agglutinative Gallicised denomination of Charlemagne), was a man great in all ways, physically and mentally. Within a couple of centuries after his death Charlemagne became the centre of innumerable legends; and the myth-making process does not seem to have been sensibly interfered with by the existence of sober and truthful histories of the Emperor and of the times which immediately preceded and followed his reign, by a contemporary writer who occupied a high and confidential position in his court, and in that of his successor. This was one Eginhard, or Einhard, who appears to have been born about A.D. 770, and spent his youth at the court, being educated along with Charles's sons. There is excellent contemporary testimony not only to Eginhard's existence, but to his abilities, and to the place which he occupied in the circle of the intimate friends of the great ruler whose life he subsequently wrote. In fact, there is as good evidence of Eginhard's existence, of his official position, and of his being the author of the chief works attributed to him, as can reason-

ably be expected in the case of a man who lived more than a thousand years ago, and was neither a great king nor a great warrior. The works are—1. "The Life of the Emperor Karl." 2. "The Annals of the Franks." 3. "Letters." 4. "The History of the Translation of the Blessed Martyrs of Christ, SS. Marcellinus and Petrus."

It is to the last, as one of the most singular and interesting records of the period during which the Roman world passed into that of the Middle Ages, that I wish to direct attention.¹ It was written in the ninth century, somewhere, apparently, about the year 830, when Eginhard, ailing in health and weary of political life, had withdrawn to the monastery of Seligenstadt, of which he was the founder. A manuscript copy of the work, made in the tenth century, and once the property of the monastery of St. Bavon on the Scheldt, of which Eginhard was abbot, is still extant, and there is no reason to believe that, in this copy, the original has been in any way interpolated or otherwise tampered with. The main features of

¹ My citations are made from Teulet's *Einhardi omnia que extant opera*, Paris, 1840-1843, which contains a biography of the author, a history of the text, with translations into French, and many valuable annotations.

the strange story contained in the "Historia Translationis" are set forth in the following pages, in which, in regard to all matters of importance, I shall adhere as closely as possible to Eginhard's own words.

While I was still at Court, busied with secular affairs, I often thought of the leisure which I hoped one day to enjoy in a solitary place, far away from the crowd, with which the liberality of Prince Louis, whom I then served, had provided me. This place is situated in that part of Germany which lies between the Neckar and the Maine,¹ and is nowadays called the Odenwald by those who live in and about it. And here having built, according to my capacity and resources, not only houses and permanent dwellings, but also a basilica fitted for the performance of divine service and of no mean style of construction, I began to think to what saint or martyr I could best dedicate it. A good deal of time had passed while my thoughts fluctuated about this matter, when it happened that a certain deacon of the Roman Church, named Deusdona, arrived at the Court for the purpose of seeking the favour of the King in some affairs in which he was interested. He remained some time; and then, having transacted his business, he was about to return to Rome, when one day, moved by courtesy to a stranger, we invited him to a modest refectory; and while talking of many things at table, mention was made of the translation of the body of the blessed Sebastian,² and of the neglected tombs of the martyrs, of which there is such a prodigious number at Rome; and the conversation having turned towards the dedication of our new basilica, I began to inquire how it might be possible for me to obtain some of the true relics of the saints which rest at Rome. He at first hesitated, and declared that he did not know how that could be done. But observing that I was both anxious and curious about the subject, he promised to give me an answer some other day.

When I returned to the question some time afterwards, he immediately drew from his bosom a paper, which he begged me to read when I was alone, and to tell him what I was disposed to think of that which was therein stated. I took the paper and, as he desired, read it alone and in secret. (Cap. 1, 2, 3.)

I shall have occasion to return to Deacon Deusdona's conditions, and to what happened after Eginhard's accept-

ance of them. Suffice it, for the present, to say that Eginhard's notary, Ratleicus (Ratleig), was despatched to Rome and succeeded in securing two bodies, supposed to be those of the holy martyrs Marcellinus and Petrus; and when he had got as far on his homeward journey as the Burgundian town of Solothurn, or Soleure,¹ notary Ratleig despatched to his master, at St. Bavon, a letter announcing the success of his mission.

As soon as by reading it I was assured of the arrival of the saints, I despatched a confidential messenger to Maestricht to gather together priests, other clerics, and also laymen, to go out to meet the coming saints as speedily as possible. And he and his companions, having lost no time, after a few days met those who had charge of the saints at Solothurn. Joined with them, and with a vast crowd of people who gathered from all parts, singing hymns, and amidst great and universal rejoicings, they travelled quickly to the city of Argentoratum, which is now called Strasburg. Thence embarking on the Rhine, they came to the place called Portus,² and landing on the east bank of the river, at the fifth station thence they arrived at Michilinstadt,³ accompanied by an immense multitude, praising God. This place is in that forest of Germany which in modern times is called the Odenwald, and about six leagues from the Maine. And here, having found a basilica recently built by me, but not yet consecrated, they carried the sacred remains into it and deposited them therein, as if it were to be their final resting-place. As soon as all this was reported to me I travelled thither as quickly as I could. (Cap. ii. 14.)

Three days after Eginhard's arrival began the series of wonderful events which he narrates, and for which we have his personal guarantee. The first thing that he notices is the dream of a servant of Ratleig, the notary, who, being set to watch the holy relics in the church after vespers, went to sleep and, during his slumbers, had a vision of two pigeons, one white and one gray and white, which came and sat upon the bier over the relics; while, at the same time,

¹ Now included in Western Switzerland.

² Probably, according to Teulet, the present Sandhofer-fahrt, a little below the embouchure of the Neckar.

³ The present Michilstadt, thirty miles N.E. of Heidelberg.

² Probably, according to Teulet, the present Sandhofer-fahrt, a little below the embouchure of the Neckar.

³ The present Michilstadt, thirty miles N.E. of Heidelberg.

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a voice ordered the man to tell his master that the holy martyrs had chosen another resting-place and desired to be transported thither without delay.

Unfortunately, the saints seem to have forgotten to mention where they wished to go; and, with the most anxious desire to gratify their smallest wishes, Eginhard was naturally greatly perplexed what to do. While in this state of mind, he was one day contemplating his "great and wonderful treasure, more precious than all the gold in the world," when it struck him that the chest in which the relics were contained was quite unworthy of its contents; and, after vespers, he gave orders to one of the sacristans to take the measure of the chest in order that a more fitting shrine might be constructed. The man, having lighted a wax candle and raised the pall which covered the relics, in order to carry out his master's orders, was astonished and terrified to observe that the chest was covered with a blood-like exudation (*loculum mirum in modum humore sanguineo undique distillantem*), and at once sent a message to Eginhard.

Then I and those priests who accompanied me beheld this stupendous miracle, worthy of all admiration. For just as when it is going to rain, pillars and slabs and marble images exude moisture, and, as it were, sweat, so the chest which contained the most sacred relics was found moist with the blood exuding on all sides. (Cap. ii. 16.)

Three days' fast was ordained in order that the meaning of the portent might be ascertained. All that happened, however, was that, at the end of that time, the "blood," which had been exuding in drops all the while, dried up. Eginhard is careful to say that the liquid "had a saline taste, something like that of tears, and was thin as water, though of the colour of true blood," and he clearly thinks this satisfactory evidence that it was blood.

The same night, another servant had a vision, in which still more imperative orders for the removal of the relics were given; and, from that time forth, "not

a single night passed without one, two, or even three of our companions receiving revelations in dreams that the bodies of the saints were to be transferred from that place to another." At last a priest, Hildfrid, saw, in a dream, a venerable white-haired man in a priest's vestments, who bitterly reproached Eginhard for not obeying the repeated orders of the saints; and, upon this, the journey was commenced. Why Eginhard delayed obedience to these repeated visions so long does not appear. He does not say so, in so many words, but the general tenor of the narrative leads one to suppose that Mulinheim (afterwards Seligenstadt) is the "solitary place" in which he had built the church which awaited dedication. In that case, all the people about him would know that he desired that the saints should go there. If a glimmering of secular sense led him to be a little suspicious about the real cause of the unanimity of the visionary beings who manifested themselves to his *entourage* in favour of moving on, he does not say so.

At the end of the first day's journey, the precious relics were deposited in the church of St. Martin, in the village of Ostheim. Hither, a paralytic nun (*sanctimonialis quaedam paralytica*) of the name of Ruodlang was brought, in a car, by her friends and relatives from a monastery a league off. She spent the night watching and praying by the bier of the saints; and health returning to all her members, on the morrow she went back to her place whence she came, on her feet, nobody supporting her, or in any way giving her assistance." (Cap. ii. 19.)

On the second day, the relics were carried to Upper Mulinheim; and, finally, in accordance with the orders of the martyrs, deposited in the church of that place, which was therefore renamed Seligenstadt. Here, Daniel, a beggar boy of fifteen, and so bent that "he could not look at the sky without lying on his back," collapsed and fell down during the celebration of the Mass.

"Thus he lay a long time, as if asleep, and all his limbs straightening and his flesh strengthening (*recepta firmitate nervorum*), he arose before our eyes, quite well." (Cap. ii. 20.)

Some time afterwards an old man entered the church on his hands and knees, being unable to use his limbs properly:—

He, in presence of all of us, by the power of God and the merits of the blessed martyrs, in the same hour in which he entered was so perfectly cured that he walked without so much as a stick. And he said that, though he had been deaf for five years, his deafness had ceased along with the palsy. (Cap. iii. 33.)

Eginhard was now obliged to return to the Court at Aix-la-Chapelle, where his duties kept him through the winter; and he is careful to point out that the later miracles which he proceeds to speak of are known to him only at second hand. But, as he naturally observes, having seen such wonderful events with his own eyes, why should he doubt similar narrations when they are received from trustworthy sources?

Wonderful stories these are indeed, but as they are, for the most part, of the same general character as those already recounted, they may be passed over. There is, however, an account of a possessed maiden which is worth attention. This is set forth in a memoir, the principal contents of which are the speeches of a demon who declared himself to possess the singular appellation of "Wiggo," and revealed himself in the presence of many witnesses, before the altar, close to the relics of the blessed martyrs. It is noteworthy that the revelations appear to have been made in the shape of replies to the questions of the exorcising priest; and there is no means of judging how far the answers are, really, only the questions to which the patient replied yes or no.

The possessed girl, about sixteen years of age, was brought by her parents to the basilica of the martyrs.

When she approached the tomb containing the sacred bodies, the priest, according to

custom, read the formula of exorcism over her head. When he began to ask how and when the demon had entered her, she answered, not in the tongue of the barbarians, which alone the girl knew, but in the Roman tongue. And when the priest was astonished and asked how she came to know Latin, when her parents, who stood by, were wholly ignorant of it, "Thou hast never seen my parents," was the reply. To this the priest, "Whence art thou, then, if these are not thy parents?" And the demon, by the mouth of the girl, "I am a follower and disciple of Satan, and for a long time I was gate-keeper (janitor) in hell; but, for some years, along with eleven companions, I have ravaged the kingdom of the Franks." (Cap. v. 49.)

He then goes on to tell how they blasted the crops and scattered pestilence among beasts and men, because of the prevalent wickedness of the people.¹

The enumeration of all these iniquities, in oratorical style, takes up a whole octavo page; and at the end it is stated, "All these things the demon spoke in Latin by the mouth of the girl."

And when the priest imperatively ordered him to come out, "I shall go," said he, "not in obedience to you, but on account of the power of the saints, who do not allow me to remain any longer." And, having said this, he threw the girl down on the floor and there compelled her to lie prostrate for a time, as though she slumbered. After a little while, however, he going away, the girl, by the power of Christ and the merits of the blessed martyrs, as it were awaking from sleep, rose up quite well, to the astonishment of all present; nor after the demon had gone out was she able to speak Latin: so that it was plain enough that it was not she who had spoken in that tongue, but the demon by her mouth. (Cap. v. 51.)

If the "Historia Translationis" contained nothing more than has been laid before the reader, up to this time, disbelief in the miracles of which it gives so precise and full a record might well be regarded as hyper-scepticism. It might fairly be said, Here you have a man, whose high character, acute intelligence, and large instruction are certified by eminent contemporaries; a man who stood high in the confidence of one of the greatest rulers of any age,

¹ In the Middle Ages one of the most favourite accusations against witches was that they committed just these enormities.

and whose other works prove him to be an accurate and judicious narrator of ordinary events. This man tells you, in language which bears the stamp of sincerity, of things which happened within his own knowledge, or within that of persons in whose veracity he has entire confidence, while he appeals to his sovereign and the court as witnesses of others; what possible ground can there be for disbelieving him?

Well, it is hard upon Eginhard to say so, but it is exactly the honesty and sincerity of the man which are his undoing as a witness to the miraculous. He himself makes it quite obvious that when his profound piety comes on the stage, his good sense and even his perception of right and wrong, make their exit. Let us go back to the point at which we left him, secretly perusing the letter of Deacon Deusdona. As he tells us, its contents were

that he [the deacon] had many relics of saints at home, and that he would give them to me if I would furnish him with the means of returning to Rome; he had observed that I had two mules, and if I would let him have one of them and would despatch with him a confidential servant to take charge of the relics, he would at once send them to me. This plausibly expressed proposition pleased me, and I made up my mind to test the value of the somewhat ambiguous promise at once;¹ so giving him the mule and money for his journey I ordered my notary Ratleig (who already desired to go to Rome to offer his devotions there) to go with him. Therefore, having left Aix-la-Chapelle (where the Emperor and his Court resided at the time) they came to Soissons. Here they spoke with Hildoin, abbot of the monastery of St. Medardus, because the said deacon had assured him that he had the means of placing in his possession the body of the blessed Tiburtius the Martyr. Attracted by which promises he (Hildoin) sent with them a certain priest, Hunus by name, a sharp man (*hominem callidum*), whom he ordered to receive and bring back the body of the martyr in question. And so, resuming their journey, they proceeded to Rome as fast as they could. (Cap. i. 3.)

¹ It is pretty clear that Eginhard had his doubts about the deacon, whose pledges he qualifies as *sponsiones incertae*. But, to be sure, he wrote after events which fully justified scepticism.

Unfortunately, a servant of the notary, one Reginbald, fell ill of a tertian fever, and impeded the progress of the party. However, this piece of adversity had its sweet uses; for three days before they reached Rome, Reginbald had a vision. Somebody habited as a deacon appeared to him and asked why his master was in such a hurry to get to Rome; and when Reginbald explained their business, this visionary deacon, who seems to have taken the measure of his brother in the flesh with some accuracy, told him not by any means to expect that Deusdona would fulfil his promises. Moreover, taking the servant by the hand, he led him to the top of a high mountain and, showing him Rome (where the man had never been), pointed out a church, adding "Tell Ratleig the thing he wants is hidden there; let him get it as quickly as he can and go back to his master." By way of a sign that the order was authoritative, the servant was promised that, from that time forth, his fever should disappear. And as the fever did vanish to return no more, the faith of Eginhard's people in Deacon Deusdona naturally vanished with it (*et fidem diaconi promissis non habuerunt*). Nevertheless, they put up at the deacon's house near St. Peter ad Vincula. But time went on and no relics made their appearance, while the notary and the priest were put off with all sorts of excuses—the brother to whom the relics had been confided was gone to Beneventum and not expected back for some time, and so on—until Ratleig and Hunus began to despair, and were minded to return, *infecto negotio*.

But my notary, calling to mind his servant's dream, proposed to his companion that they should go to the cemetery which their host had talked about without him. So, having found and hired a guide, they went in the first place to the basilica of the blessed Tiburtius in the Via Labicana, about three thousand paces from the town, and cautiously and carefully inspected the tomb of that martyr, in order to discover whether it could be opened without any one being the wiser. Then they descended into the adjoining crypt, in which the bodies of the blessed martyrs of Christ, Marcellinus and

Petrus, were buried; and, having made out the nature of their tomb, they went away thinking their host would not know what they had been about. But things fell out differently from what they had imagined. (Cap. i. 7.)

In fact, Deacon Deusdona, who doubtless kept an eye on his guests, knew all about their manœuvres and made haste to offer his services, in order that, "with the help of God" (*si Deus votis eorum favere dignaretur*), they should all work together. The deacon was evidently alarmed less they should succeed without his help.

So, by way of preparation for the contemplated *vol avec affraction* they fasted three days; and then, at night, without being seen, they betook themselves to the basilica of St. Tiburtius, and tried to break open the altar erected over his remains. But the marble proving too solid, they descended to the crypt, and, "having evoked our Lord Jesus Christ and adored the holy martyrs," they proceeded to prise off the stone which covered the tomb, and thereby exposed the body of the most sacred martyr, Marcellinus, "whose head rested on a marble tablet on which his name was inscribed." The body was taken up with the greatest veneration, wrapped in a rich covering, and given over to the keeping of the deacon and his brother, Lunison, while the stone was replaced with such care that no sign of the theft remained.

As sacrilegious proceedings of this kind were punishable with death by the Roman law, it seems not unnatural that Deacon Deusdona should have become uneasy, and have urged Ratleig to be satisfied with what he had got and be off with his spoils. But the notary having thus cleverly captured the blessed Marcellinus, thought it a pity he should be parted from the blessed Petrus, side by side with whom he had rested, for five hundred years and more, in the same sepulchre (as Eginhard pathetically observes); and the pious man could neither eat, drink, nor sleep, until he had compassed his desire to re-unite

the saintly colleagues. This time, apparently in consequence of Deusdona's opposition to any further resurrectionist doings, he took counsel with a Greek monk, one Basil, and, accompanied by Hunus, but saying nothing to Deusdona, they committed another sacrilegious burglary, securing this time, not only the body of the blessed Petrus, but a quantity of dust, which they agreed the priest should take, and tell his employer that it was the remains of the blessed Tiburtius. How Deusdona was "squared," and what he got for his not very valuable complicity in these transactions, does not appear. But at last the relics were sent off in charge of Lunison, the brother of Deusdona, and the priest Hunus, as far as Pavia, while Ratleig stopped behind for a week to see if the robbery was discovered, and, presumably, to act as a blind, if any hue and cry was raised. But, as everything remained quiet, the notary betook himself to Pavia, where he found Lunison and Hunus awaiting his arrival. The notary's opinion of the character of his worthy colleagues, however, may be gathered from the fact that having persuaded them to set out in advance along a road which he told them he was about to take, he immediately adopted another route, and, travelling by way of St. Maurice and the Lake of Geneva, eventually reached Soleure.

Eginhard tells all this story with the most naive air of unconsciousness that there is anything remarkable about an abbot, and a high officer of state to boot, being an accessory, both before and after the fact, to a most gross and scandalous act of sacrilegious and burglarious robbery. And an amusing sequel to the story proves that, where relics were concerned, his friend Hildoin, another high ecclesiastical dignitary, was even less scrupulous than himself.

On going to the palace early one morning, after the saints were safely bestowed at Seligenstadt, he found Hildoin waiting for an audience in the Emperor's antechamber, and began to talk to him about the miracle of the

bloody exudation. In the course of conversation, Eginhard happened to allude to the remarkable fineness of the garment of the blessed Marcellinus. Whereupon Abbot Hildoin observed (to Eginhard's stupefaction) that his observations were quite correct. Much astonished at this remark from a person who was supposed not to have seen the relics, Eginhard asked him how he knew that? Upon this, Hildoin saw that he had better make a clean breast of it, and he told the following story, which he had received from his priestly agent, Hunus. While Hunus and Lunison were at Pavia, waiting for Eginhard's notary, Hunus (according to his own account) had robbed the robbers. The relics were placed in a church; and a number of laymen and clerics, of whom Hunus was one, undertook to keep watch over them. One night, however, all the watchers, save the wide-awake Hunus, went to sleep; and then, according to the story which this "sharp" ecclesiastic foisted upon his patron,

it was borne in upon his mind that there must be some great reason why all the people, except himself, had suddenly become somnolent; and, determining to avail himself of the opportunity thus offered (*oblata occasione utendum*), he rose and, having lighted a candle, silently approached the chests. Then, having burnt through the threads of the seals with the flame of the candle, he quickly opened the chests, which had no locks;¹ and, taking out portions of each of the bodies which were thus exposed, he closed the chests and connected the burnt ends of the threads with the seals again, so that they appeared not to have been touched; and, no one having seen him, he returned to his place. (Cap. iii. 23.)

Hildoin went on to tell Eginhard that Hunus at first declared to him that these purloined relics belonged to St. Tiburtius; but afterwards confessed, as a great secret, how he had come by

them, and he wound up his discourse thus:

They have a place of honour beside St. Medardus, where they are worshipped with great veneration by all the people; but whether we may keep them or not is for your judgment. (Cap. iii. 23.)

Poor Eginhard was thrown into a state of great perturbation of mind by this revelation. An acquaintance of his had recently told him of a rumour that was spread about that Hunus had contrived to abstract *all* the remains of SS. Marcellinus and Petrus while Eginhard's agents were in a drunken sleep; and that, while the real relics were in Abbot Hildoin's hands at St. Medardus, the Shrine at Seligenstadt contained nothing but a little dust. Though greatly annoyed by this "execrable rumour, spread everywhere by the subtlety of the devil," Eginhard had doubtless comforted himself by his supposed knowledge of its falsity, and he only now discovered how considerable a foundation there was for the scandal. There was nothing for it but to insist upon the return of the stolen treasures. One would have thought that the holy man, who had admitted himself to be knowingly a receiver of stolen goods, would have made instant restitution and begged only for absolution. But Eginhard intimates that he had very great difficulty in getting his brother abbot to see that even restitution was necessary.

Hildoin's proceedings were not of such a nature as to lead any one to place implicit confidence in anything he might say; still less had his agent, priest Hunus, established much claim to confidence; and it is not surprising that Eginhard should have lost no time in summoning his notary and Lunison to his presence, in order that he might hear what they had to say about the business. They, however, at once protested that priest Hunus's story was a parcel of lies, and that after the relics left Rome no one had any opportunity of meddling with them

¹ The words are *scrinia sine clave*, which seems to mean "having no key." But the circumstances forbid the idea of breaking open.

Moreover, Lunison, throwing himself at Eginhard's feet, confessed with many tears what actually took place. It will be remembered that after the body of St. Marcellinus was abstracted from its tomb, Ratleig deposited it in the house of Deusdona, in charge of the latter's brother, Lunison. But Hunus being very much disappointed that he could not get hold of the body of St. Tiburtius, and afraid to go back to his abbot empty-handed, bribed Lunison with four pieces of gold and five of silver to give him access to the chest. This Lunison did, and Hunus helped himself to as much as would fill a gallon-measure (*was sextarii mensuram*) of the sacred remains. Eginhard's indignation at the "rapine" of this "nequissimus nebulo" is exquisitely droll. It would appear that the adage about the receiver being as bad as the thief was not current in the ninth century.

Let us now briefly sum up the history of the acquisition of the relics. Eginhard makes a contract with Deusdona for the delivery of certain relics which the latter says he possesses. Eginhard makes no inquiry how he came by them; otherwise, the transaction is innocent enough.

Deusdona turns out to be a swindler, and has no relics. Thereupon Eginhard's agent, after due fasting and prayer, breaks open the tombs and helps himself.

Eginhard discovers by the self-betrayal of his brother abbot, Hildoin, that portions of his relics have been stolen and conveyed to the latter. With much ado he succeeds in getting them back.

Hildoin's agent, Hunus, in delivering these stolen goods to him, at first declared they were the relics of St. Tiburtius, which Hildoin desired him to obtain; but afterwards invented a story of their being the product of a theft, which the providential drowsiness of his companions enabled him to perpetrate, from the relics which Hildoin well knew were the property of his friend.

Lunison, on the contrary, swears that all this story is false, and that he himself

was bribed by Hunus to allow him to steal what he pleased from the property confided to his own and his brother's care by their guest Ratleig. And the honest notary himself seems to have no hesitation about lying and stealing to any extent, where the acquisition of relics is the object in view.

For a parallel to these transactions one must read a police report of the doings of a "long firm" or of a set of horse-coupers; yet Eginhard seems to be aware of nothing, but that he has been rather badly used by his friend Hildoin, and the "nequissimus nebulo" Hunus.

It is not easy for a modern Protestant, still less for any one who has the least tincture of scientific culture, whether physical or historical, to picture to himself the state of mind of a man of the ninth century, however cultivated, enlightened, and sincere he may have been. His deepest convictions, his most cherished hopes, were bound up with the belief in the miraculous. Life was a constant battle between saints and demons for the possession of the souls of men. The most superstitious among our modern countrymen turn to supernatural agencies only when natural causes seem insufficient; to Eginhard and his friends the supernatural was the rule; and the sufficiency of natural causes was allowed only when there was nothing to suggest others.

Moreover, it must be recollected that the possession of miracle-working relics was greatly coveted, not only on high, but on very low grounds. To a man like Eginhard, the mere satisfaction of the religious sentiment was obviously a powerful attraction. But, more than this, the possession of such a treasure was an immense practical advantage. If the saints were duly flattered and worshipped, there was no telling what benefits might result from their interposition on your behalf. For physical evils, access to the shrine was like the grant of the use of a universal pill and ointment manufactory; and pilgrimages

hereto might suffice to cleanse the performers from any amount of sin. A letter to Lupus, subsequently Abbot of Ferrara, written while Eginhard was smarting under the grief caused by the loss of his much-loved wife Imma, affords a striking insight into the current view of the relation between the glorified saints and their worshippers. The writer shows that he is anything but satisfied with the way in which he has been treated by the blessed martyrs whose remains he has taken such pains to "convey" to Seligenstadt, and to honour there as they would never have been honoured in their Roman obscurity.

It is an aggravation of my grief and a reopening of my wound, that our vows have been of no avail, and that the faith which we placed in the merits and intervention of the martyrs has been utterly disappointed.

We may admit, then, without impeachment of Eginhard's sincerity, or of his honour under all ordinary circumstances, that when piety, self-interest, the glory of the Church in general, and that of the church at Seligenstadt in particular, all pulled one way, even the workaday principles of morality were disregarded; and, *a fortiori*, anything like proper investigation of the reality of alleged miracles was thrown to the winds.

And if this was the condition of mind of such a man as Eginhard, what is it not legitimate to suppose may have been that of Deacon Deusdona, Lunison, Hunus, and company, thieves and cheats by their own confession, or of the probably hysterical nun, or of the professional beggars, for whose incapacity to walk and straighten themselves there is no guarantee but their own? Who is to make sure that the exorcist of the demon Wiggo was not just such another priest as Hunus; and is it not at least possible, when Eginhard's servants dreamed, night after night, in such a curiously coincident fashion, that a careful inquirer might have found they were very anxious to please their master?

Quite apart from deliberate and conscious fraud (which is a rarer thing than is often supposed), people whose mythopoeic faculty is once stirred, are capable of saying the thing that is not, and of acting as they should not, to an extent which is hardly imaginable by persons who are not so easily affected by the contagion of blind faith. There is no falsity so gross that honest men and, still more, virtuous women, anxious to promote a good cause, will not lend themselves to it without any clear consciousness of the moral bearings of what they are doing. The cases of miraculously-effected cures of which Eginhard is ocular witness appear to belong to classes of disease in which malingering is possible or hysteria presumable. Without modern means of diagnosis, the names given to them are quite worthless. One "miracle," however, in which the patient, a woman, was cured by the mere sight of the church in which the relics of the blessed martyrs lay, is an unmistakable case of dislocation of the lower jaw; and it is obvious that, as not unfrequently happens in such accidents in weakly subjects, the jaw slipped suddenly back into place, perhaps in consequence of a jolt, as the woman rode towards the church. (Cap. v. 53.)¹

There is also a good deal said about a very questionable blind man—one Albricus (Alberich?)—who having been cured, not of his blindness, but of another disease under which he laboured, took up his quarters at Seligenstadt, and came out as a prophet, inspired by the Archangel Gabriel. Eginhard intimates that his prophecies were fulfilled; but as he does not state exactly what they were, or how they were accomplished, the statement must be accepted with much caution. It is obvious that he

¹ Eginhard speaks with lofty contempt of the "vana ac superstitiosa præsumptio" of the poor woman's companions in trying to alleviate her sufferings with "herbs and frivolous incantations." Vain enough, no doubt, but the "mulierculæ" might have returned the epithet "superstitious" with interest.

was not the man to hesitate to "ease" a prophecy until it fitted, if the credit of the shrine of his favourite saints could be increased by such a procedure. There is no impeachment of his honour in the supposition. The logic of the matter is quite simple, if somewhat sophistical. The holiness of the Church of the martyrs guarantees the reality of the appearance of the Archangel Gabriel there; and what the archangel says must be true. Therefore if anything seem to be wrong, that must be the mistake of the transmitter; and, in justice to the archangel, it must be suppressed or set right. This sort of "reconciliation" is not unknown in quite modern times, and among people who would be very much shocked to be compared with a "benighted papist" of the ninth century.

The readers of this essay are, I imagine, very largely composed of people who would be shocked to be regarded as anything but enlightened Protestants. It is not unlikely that those of them who have accompanied me thus far may be disposed to say, "Well, this is all very amusing as a story, but what is the practical interest of it? We are not likely to believe in the miracles worked by the spolia of SS. Marcellinus and Petrus, or by those of any other saints in the Roman Calendar."

The practical interest is this: if you do not believe in these miracles recounted by a witness whose character and competency are firmly established, whose sincerity cannot be doubted, and who appeals to his sovereign and other contemporaries as witnesses of the truth of what he says in a document of which a MS. copy exists, probably dating within a century of the author's death, why do you profess to believe in stories of a like character, which are found in documents of the dates and of the authorship of which nothing is certainly determined, and no known copies of which come within two or three centuries of the events they record? If it be true that the four Gospels and the Acts

were written by Matthew, Mark, Luke, and John, all that we know of these persons comes to nothing in comparison with our knowledge of Eginhard; and not only is there no proof that the traditional authors of these works wrote them, but very strong reasons to the contrary may be alleged. If, therefore, you refuse to believe that "Wiggo" was cast out of the possessed girl on Eginhard's authority, with what justice can you profess to believe that the legion of devils were cast out of the man among the tombs of the Gadarenes? And if, on the other hand, you accept Eginhard's evidence, why do you laugh at the supposed efficacy of relics and the saint-worship of the modern Romanists? It cannot be pretended, in the face of all evidence, that the Jews of the year 30 A.D. or thereabouts, were less imbued with the belief in the supernatural than were the Franks of the year 800 A.D. The same influences were at work in each case, and it is only reasonable to suppose that the results were the same. If the evidence of Eginhard is insufficient to lead reasonable men to believe in the miracles he relates, *a fortiori* the evidence afforded by the Gospels and the Acts must be so.¹

But it may be said that no serious critic denies the genuineness of the four great Pauline Epistles—Galatians, First and Second Corinthians, and Romans—and that in three out of these four Paul lays claim to the power of working miracles.² Must we suppose, therefore, that the Apostle to the Gentiles has stated that which is false? But to how much does this so-called claim amount? It may mean much or little. Paul nowhere tells us what he did in this direction; and in his sore need to justify

¹ Of course there is nothing new in this argument; but it does not grow weaker by age. And the case of Eginhard is far more instructive than that of Augustine, because the former has so very frankly, though incidentally, revealed to us not only his own mental and moral habits, but those of the people about him.

² See 1 Cor. xii. 10-28; 2 Cor. vi. 12; Rom. xv. 19.

THE VALUE OF WITNESS TO THE MIRACULOUS

the assumption of apostleship against the sneers of his enemies, it is hardly likely that, if he had any very striking cases to bring forward, he would have neglected evidence so well calculated to put them to shame. And, without the slightest impeachment of Paul's veracity, we must further remember that his strongly-marked mental characteristics, displayed in unmistakable fashion in these Epistles, are anything but those which would justify us in regarding him as a critical witness respecting matters of fact, or as a trustworthy interpreter of their significance. When a man testifies to a miracle, he not only states a fact, but he adds an interpretation of the fact. We may admit his evidence as to the former, and yet think his opinion as to the latter worthless. If Eginhard's calm and objective narrative of the historical events of his time is no guarantee for the soundness of his judgment where the supernatural is concerned, the heated rhetoric of the Apostle of the Gentiles, his absolute confidence in the "inner light," and the extraordinary conceptions of the nature and requirements of logical proof which he betrays, in page after page of his Epistles, afford still less security.

There is a comparatively modern man who shared to the full Paul's trust in the "inner light," and who, though widely different from the fiery evangelist of Tarsus in various obvious particulars, yet, if I am not mistaken, shares his deepest characteristics. I speak of George Fox, who separated himself from the current Protestantism of England, in the seventeenth century, as Paul separated himself from the Judaism of the first century, at the bidding of the "inner light"; who went through persecutions as serious as those which Paul enumerates; who was beaten, stoned, cast out for dead, imprisoned nine times, sometimes for long periods, who was in perils on land and perils at sea. George Fox was an even more widely-travelled missionary; while his success in founding congregations, and

his energy in visiting them, not merely in Great Britain and Ireland and the West India Islands, but on the continent of Europe and that of North America, were no less remarkable. A few years after Fox began to preach, there were reckoned to be a thousand Friends in prison in the various gaols of England; at his death, less than fifty years after the foundation of the sect, there were 70,000 Quakers in the United Kingdom. The cheerfulness with which these people—women as well as men—underwent martyrdom in this country and in the New England States is one of the most remarkable facts in the history of religion.

No one who reads the voluminous autobiography of "Honest George" can doubt the man's utter truthfulness; and though, in his multitudinous letters, he but rarely rises far above the incoherent commonplaces of a street preacher, there can be no question of his power as a speaker, nor any doubt as to the dignity and attractiveness of his personality, or of his possession of a large amount of practical good sense and governing faculty.

But that George Fox had full faith in his own powers as a miracle-worker, the following passage of his autobiography (to which others might be added) demonstrates:—

Now after I was set at liberty from Nottingham gaol (where I had been kept a prisoner a pretty long time) I travelled as before, in the work of the Lord. And coming to Mansfield Woodhouse, there was a distracted woman, under a doctor's hand, with her hair let loose all about her ears; and he was about to let her blood, she being first bound, and many people being about her, holding her by violence; but he could get no blood from her. And I desired them to unbind her and let her alone; for they could not touch the spirit in her by which she was tormented. So they did unbind her, and I was moved to speak to her, and in the name of the Lord to bid her be quiet and still. And she was so. And the Lord's power settled her mind and she mended; and afterwards received the truth and continued in it to her death. And the Lord's name was honoured; to whom the glory of all His works belongs. Many great and wonderful things were wrought by the heavenly power in those days. For the Lord made bare His omnipotent arm and manifested

His power to the astonishment of many ; by the healing virtue whereof many have been delivered from great infirmities, and the devils were made subject through His name : of which particular instances might be given beyond what this unbelieving age is able to receive or bear.¹

It needs no long study of Fox's writings, however, to arrive at the conviction that the distinction between subjective and objective verities had not the same place in his mind as it has in that of an ordinary mortal. When an ordinary person would say "I thought so and so," or "I made up my mind to do so and so," George Fox says, "It was opened to me," or "at the command of God I did so and so." "Then at the command of God on the ninth day of the seventh month 1643 (Fox being just nineteen), I left my relations and brake off all familiarity or friendship with young or old." "About the beginning of the year 1647 I was moved of the Lord to go into Darbyshire." Fox hears voices and he sees visions, some of which he brings before the reader with apocalyptic power in the simple and strong English, alike untutored and undefiled, of which, like John Bunyan, his contemporary, he was a master.

"And one morning, as I was sitting by the fire, a great cloud came over me and a temptation beset me ; and I sate still. And it was said, *All things come*

by Nature. And the elements and powers came over me ; so that I was in a manner quite clouded with it. . . . And as I sate still under it, and let it alone, a living hope arose in me and a true voice arose in me which said, *There is a living God who made all things.* And immediately the cloud and the temptation vanished away, and life rose over it all, and my heart was glad and I praised the living God" (p. 13).

If George Fox could speak, as he proves in this and some other passages he could write, his astounding influence on the contemporaries of Milton and of Cromwell is no mystery. But this modern reproduction of the ancient prophet, with his "Thus saith the Lord," "This is the work of the Lord," steeped in supernaturalism and glorying in blind faith, is the mental antipodes of the philosopher, founded in naturalism and a fanatic for evidence, to whom these affirmations inevitably suggest the previous question : "How do you know that the Lord saith it?" "How do you know that the Lord doeth it?" and who is compelled to demand that rational ground for belief, without which, to the man of science, assent is merely an immoral pretence.

And it is this rational ground of belief which the writers of the Gospels, no less than Paul, and Eginhard, and Fox, so little dream of offering that they would regard the demand for it as a kind of blasphemy.

¹ *A Journal or Historical Account of the Life, Travels, Sufferings, and Christian Experiences, &c., of George Fox.* Ed. 1694, pp. 27, 28.

AGNOSTICISM

[1889]

WITHIN the last few months [1889] the public has received much and varied information on the subject of Agnostics, their tenets, and even their future. Agnosticism exercised the orators of the Church Congress at Manchester.¹ It has been furnished with a set of "articles," fewer, but not less rigid, and certainly not less consistent than the thirty-nine; its nature has been analysed, and its future severely predicted by the most eloquent of that prophetic school whose Samuel is Auguste Comte. It may still be a question, however, whether the public is as much the wiser as might be expected, considering all the trouble that has been taken to enlighten it. Not only are the three accounts of the agnostic position sadly out of harmony with one another, but I propose to show cause for my belief that all three must be seriously questioned by anyone who employs the term "agnostic" in the sense in which it was originally used. The learned Principal of King's College, who brought the topic of Agnosticism before the Church Congress, took a short and easy way of settling the business:—

But if this be so, for a man to urge, as an escape from this article of belief, that he has no means of a scientific knowledge of the unseen world, or of the future, is irrelevant. His difference from Christians lies not in the fact that he has no knowledge of these things, but that he does not believe the authority on which they are stated. He may prefer to call himself an agnostic; but his real name is an older one—he is an infidel; that is to say, an unbeliever. The word infidel, perhaps, carries an unpleasant significance. Perhaps it is right that it should. It is, and it ought to be, an unpleasant thing

for a man to have to say plainly that he does not believe in Jesus Christ.¹

So much of Dr. Wace's address either explicitly or implicitly concerns me, that I take upon myself to deal with it; but, in doing so, it must be understood that I speak for myself alone. I am not aware that there is any sect of Agnostics; and if there be, I am not its acknowledged prophet or pope. I desire to leave to the Comtists the entire monopoly of the manufacture of imitation ecclesiasticism.

Let us calmly and dispassionately consider Dr. Wace's appreciation of agnosticism. The agnostic, according to his view, is a person who says he has no means of attaining a scientific knowledge of the unseen world or of the future; by which somewhat loose phraseology Dr. Wace presumably means the theological unseen world and future. I cannot think this description happy, either in form or substance; but for the present it may pass. Dr. Wace continues that is not "his difference from Christians." Are there then any Christians who say that they know nothing about the unseen world and the future? I was ignorant of the fact, but I am ready to accept it on the authority of a professional theologian, and I proceed to Dr. Wace's next proposition.

¹ [In this place and in *Illustrations of Mr. Gladstone's Controversial Methods*, there are references to the late Archbishop of York which are of no importance to my main argument, and which I have expunged because I desire to obliterate the traces of a temporary misunderstanding with a man of rare ability, candour, and wit, for whom I entertained a great liking and no less respect. I rejoice to think now of the (then) Bishop's cordial hail the first time we met after our little skirmish, "Well, is it to be peace or war?" I replied, "A little of both." But there was only peace when we parted, and ever after.]

¹ See the *Official Report of the Church Congress held at Manchester*, October 1888, pp. 12-13.

The real state of the case, then, is that the agnostic "does not believe the authority" on which "these things" are stated, which authority is Jesus Christ. He is simply an old-fashioned "infidel" who is afraid to own to his right name. As "presbyter is priest writ large," so is "agnostic" the mere Greek equivalent for the Latin "infidel." There is an attractive simplicity about this solution of the problem; and it has that advantage of being somewhat offensive to the persons attacked, which is so dear to the less refined sort of controversialist. The agnostic says, "I cannot find good evidence that so and so is true." "Ah," says his adversary, seizing his opportunity, "then you declare that Jesus Christ was untruthful, for he said so and so;" a very telling method of rousing prejudice. But suppose that the value of the evidence as to what Jesus may have said and done, and as to the exact nature and scope of his authority, is just that which the agnostic finds it most difficult to determine. If I venture to doubt that the Duke of Wellington gave the command "Up, Guards, and at 'em!" at Waterloo, I do not think that even Dr. Wace would accuse me of disbelieving the Duke. Yet it would be just as reasonable to do this as to accuse any one of denying what Jesus said, before the preliminary question as to what he did say is settled.

Now, the question as to what Jesus really said and did is strictly a scientific problem, which is capable of solution by no other methods than those practised by the historian and the literary critic. It is a problem of immense difficulty, which has occupied some of the best heads in Europe for the last century; and it is only of late years that their investigations have begun to converge towards one conclusion.¹

¹ Dr. Wace tells us, "It may be asked how far we can rely on the accounts we possess of our Lord's teaching on these subjects." And he seems to think the question appropriately answered by the assertion that it "ought to be regarded as settled by M. Renan's practical surrender of the adverse case." I thought I knew

That kind of faith which Dr. Wace describes and lauds is of no use here. Indeed, he himself takes pains to destroy its evidential value.

"What made the Mahommedan world? Trust and faith in the declarations and assurances of Mahommed. And what made the Christian world? Trust and faith in the declarations and assurances of Jesus Christ and His Apostles" (*l.c.* p. 253). The triumphant tone of this imaginary catechism leads me to suspect that its author has hardly appreciated its full import. Presumably, Dr. Wace regards Mahommed as an unbeliever, or, to use the term which he prefers, infidel; and considers that his assurances have given rise to a vast delusion which has led, and is leading, millions of men straight to everlasting punishment. And this being so, the "Trust and faith" which have "made the Mahommedan world," in just the same sense as they have "made the Christian world," must be trust and faith in falsehood. No man who has studied history, or even attended to the occurrences of everyday life, can doubt the enormous practical value of trust and faith; but as little will he be inclined to deny that this practical value has not the least relation to the reality of the objects of that trust and faith. In examples of patient constancy of faith and of unswerving trust, the "Acta Martyrum" do not excel the annals of Babism.¹

M. Renan's works pretty well, but I have contrived to miss this "practical" (I wish Dr. Wace had defined the scope of that useful adjective) surrender. However, as Dr. Wace can find no difficulty in pointing out the passage of M. Renan's writings, by which he feels justified in making his statement, I shall wait for further enlightenment, contenting myself, for the present, with remarking that if M. Renan were to retract and do penance in Notre-Dame to-morrow for any contributions to Biblical criticism that may be specially his property, the main results of that criticism, as they are set forth in the works of Strauss, Baur, Reuss, and Volkmar, for example, could not be sensibly affected.

¹ [See De Gobineau, *Les Religions et les Philosophies dans l'Asie Centrale*; and the recently published work of Mr. E. G. Browne, *The Episode of the Bab.*]

The discussion upon which we have now entered goes so thoroughly to the root of the whole matter; the question of the day is so completely, as the author of "Robert Elsmere" says, the value of testimony, that I shall offer no apology for following it out somewhat in detail; and, by way of giving substance to the argument, I shall base what I have to say upon a case, the consideration of which lies strictly within the province of natural science, and of that particular part of it known as the physiology and pathology of the nervous system.

I find, in the second Gospel (chap. v.), a statement, to all appearance intended to have the same evidential value as any other contained in that history. It is the well-known story of the devils who were cast out of a man, and ordered, or permitted, to enter into a herd of swine, to the great loss and damage of the innocent Gerasene, or Gadarene, pig owners. There can be no doubt that the narrator intends to convey to his readers his own conviction that this casting out and entering in were effected by the agency of Jesus of Nazareth; that, by speech and action, Jesus enforced this conviction; nor does any inkling of the legal and moral difficulties of the case manifest itself.

On the other hand, everything that I know of physiological and pathological science leads me to entertain a very strong conviction that the phenomena ascribed to possession are as purely natural as those which constitute small-pox; everything that I know of anthropology leads me to think that the belief in demons and demoniacal possession is a mere survival of a once universal superstition, and that its persistence, at the present time, is pretty much in the inverse ratio of the general instruction, intelligence, and sound judgment of the population among whom it prevails. Everything that I know of law and justice convinces me that the wanton destruction of other people's property is a misdemeanour of evil example. Again, the study of history, and especially of that of

the fifteenth, sixteenth, and seventeenth centuries, leaves no shadow of doubt on my mind that the belief in the reality of possession and of witchcraft, justly based, alike by Catholics and Protestants, upon this and innumerable other passages in both the Old and New Testaments, gave rise, through the special influence of Christian ecclesiastics, to the most horrible persecutions and judicial murders of thousands upon thousands of innocent men, women, and children. And when I reflect that the record of a plain and simple declaration upon such an occasion as this, that the belief in witchcraft and possession is wicked nonsense, would have rendered the long agony of mediæval humanity impossible, I am prompted to reject, as dishonouring, the supposition that such declaration was withheld out of condescension to popular error.

"Come forth, thou unclean spirit, out of the man" (Mark v. 8)¹ are the words attributed to Jesus. If I declare, as I have no hesitation in doing, that I utterly disbelieve in the existence of "unclean spirits," and, consequently, in the possibility of their "coming forth" out of a man, I suppose that Dr. Wace will tell me I am disregarding the testimony "of our Lord." For, if these words were really used, the most resourceful of reconcilers can hardly venture to affirm that they are compatible with a disbelief "in these things." As the learned and fair-minded, as well as orthodox, Dr. Alexander remarks, in an editorial note to the article "Dæmoniæ," in the "Biblical Cyclopædia" (vol. i. p. 664, note):—

... On the lowest grounds on which our Lord and His Apostles can be placed they must, at least, be regarded as *honest* men. Now, though honest speech does not require that words should be used always and only in their etymological sense, it does require that they should not be used so as to affirm what the speaker knows to be false. Whilst, therefore, our Lord and His Apostles might use the word *δαίμονις* (*señ dai*, or the phrase, *δαίμονιον ἔχειν*, as a popular

¹ Here, as always, the revised version is cited.

description of certain diseases, without giving in to the belief which lay at the source of such a mode of expression, they could not speak of demons entering into a man, or being cast out of him, without pledging themselves to the belief of an actual possession of the man by the demons. (Campbell, *Prél. Diss.* vi. 1, 10.) If, consequently, they did not hold this belief, they spoke not as honest men.

The story which we are considering does not rest on the authority of the second Gospel alone. The third confirms the second, especially in the matter of commanding the unclean spirit to come out of the man (Luke viii. 29); and, although the first Gospel either gives a different version of the same story, or tells another of like kind, the essential point remains: "If thou cast us out, send us away into the herd of swine. And He said unto them: Go!" (Matt. viii. 31, 32).

If the concurrent testimony of the three synoptics, then, is really sufficient to do away with all rational doubt as to the matter of fact of the utmost practical and speculative importance—belief or disbelief in which may affect, and has affected, men's lives and their conduct towards other men, in the most serious way—then I am bound to believe that Jesus implicitly affirmed himself to possess a "knowledge of the unseen world," which afforded full confirmation of the belief in demons and possession current among his contemporaries. If the story is true, the mediæval theory of the invisible world may be, and probably is, quite correct; and the witch-finders, from Sprenger to Hopkins, and Mather, are much-maligned men.

On the other hand, humanity, noting the frightful consequences of this belief; common sense, observing the futility of the evidence on which it is based, in all cases that have been properly investigated; science, more and more seeing its way to inclose all the phenomena of so-called "possession" within the domain of pathology, so far as they are not to be relegated to that of the police—all these powerful influences concur in warning us, at our peril, against accepting

the belief without the most careful scrutiny of the authority on which it rests.

I can discern no escape from this dilemma: either Jesus said what he is reported to have said, or he did not. In the former case, it is inevitable that his authority on matters connected with the "unseen world" should be roughly shaken; in the latter, the blow falls upon the authority of the synoptic Gospels. If their report on a matter of such stupendous and far-reaching practical import as this is untrustworthy, how can we be sure of its trustworthiness in other cases? The favourite "earth" in which the hard-pressed reconciler takes refuge, that the Bible does not profess to teach science,¹ is stopped in this instance. For the question of the existence of demons and of possession by them, though it lies strictly within the province of science, is also of the deepest moral and religious significance. If physical and mental disorders are caused by demons, Gregory of Tours and his contemporaries rightly considered that relics and exorcists were more useful than doctors; the gravest questions arise as to the legal and moral responsibilities of persons inspired by demoniacal impulses; and our whole conception of the universe and of our relations to it becomes totally different from what it would be on the contrary hypothesis.

¹ Does any one really mean to say that there is any internal or external criterion by which the reader of a biblical statement, in which scientific matter is contained, is enabled to judge whether it is to be taken *au sérieux* or not? Is the account of the Deluge, accepted as true in the New Testament, less precise and specific than that of the call of Abraham, also accepted as true therein? By what mark does the story of the feeding with manna in the wilderness, which involves some very curious scientific problems, show that it is meant merely for edification, while the story of the inscription of the Law on stone by the hand of Jahveh is literally true? If the story of the Fall is not the true record of an historical occurrence, what becomes of Pauline theology? Yet the story of the Fall as directly conflicts with probability, and is as devoid of trustworthy evidence, as that of the Creation or that of the Deluge, with which it forms a harmoniously legendary series.

The theory of life of an average medieval Christian was as different from that of an average nineteenth-century Englishman as that of a West African negro is now, in these respects. The modern world is slowly, but surely, shaking off these and other monstrous survivals of savage delusions; and, whatever happens, it will not return to that wallowing in the mire. Until the contrary is proved, I venture to doubt whether, at this present moment, any Protestant theologian, who has a reputation to lose, will say that he believes the Gadarene story.

The choice then lies between discrediting those who compiled the Gospel biographies and disbelieving the Master, whom they, simple souls, thought to honour by preserving such traditions of the exercise of his authority over Satan's invisible world. This is the dilemma. No deep scholarship, nothing but a knowledge of the revised version (on which it is to be supposed all that mere scholarship can do has been done), with the application thereto of the commonest canons of common sense, is needful to enable us to make a choice between its alternatives. It is hardly doubtful that the story, as told in the first Gospel, is merely a version of that told in the second and third. Nevertheless, the discrepancies are serious and irreconcilable; and, on this ground alone, a suspension of judgment at the least, is called for. But there is a great deal more to be said. From the dawn of scientific biblical criticism until the present day, the evidence against the long-cherished notion that the three synoptic Gospels are the works of three independent authors, each prompted by Divine inspiration, has steadily accumulated, until at the present time there is no visible escape from the conclusion that each of the three is a compilation consisting of a groundwork common to all three—the threefold tradition; and of a superstructure, consisting, firstly, of matter common to it with one of the others and, secondly, of matter special to each. The use of the terms "groundwork" and "superstructure" by no

means implies that the latter must be of later date than the former. On the contrary, some parts of it may be, and probably are, older than some parts of the groundwork.¹

The story of the Gadarene swine, belongs to the groundwork; at least, the essential part of it, in which the belief in demoniac possession is expressed, does; and therefore the compilers of the first, second, and third Gospels, whoever they were, certainly accepted that belief (which, indeed, was universal among both Jews and pagans at that time), and attributed it to Jesus.

What, then, do we know about the originator, or originators, of this groundwork—of that three-fold tradition which all three witnesses (in Paley's phrase) agree upon—that we should allow their mere statements to outweigh the counter arguments of humanity, of common sense, of exact science, and to imperil the respect which all would be glad to be able to render to their Master?

Absolutely nothing.² There is no proof, nothing more than a fair presumption, that any one of the Gospels existed, in the state in which we find it in the authorised version of the Bible, before the second century, or in other words, sixty or seventy years after the events recorded. And between that time and the date of the oldest extant manuscripts, of the Gospels, there is no telling what additions and alterations and interpolations may have been made. It may be said that this is all mere speculation, but it is a good deal more. As

¹ See, for an admirable discussion of the whole subject, Dr. Abbott's article on the Gospels in the *Encyclopædia Britannica*; and the remarkable monograph by Professor Volkmar, *Jesus Nazarenus und die erste christliche Zeit* (1882). Whether we agree with the conclusions of these writers or not, the method of critical investigation which they adopt is unimpeachable.

² Notwithstanding the hard words shot at me from behind the hedge of anonymity by a writer in a recent number of the *Quarterly Review*, I repeat, without the slightest fear of refutation, that the four Gospels, as they have come to us, are the work of unknown writers.

competent scholars and honest men, our revisers have felt compelled to point out that such things have happened evensince the date of the oldest known manuscripts. The oldest two copies of the second Gospel end with the 8th verse of the 16th chapter; the remaining twelve verses are spurious, and it is noteworthy that the maker of the addition has not hesitated to introduce a speech in which Jesus promises his disciples that "in My name shall they cast out devils."

The other passage "rejected to the margin" is still more instructive. It is that touching apologue, with its profound ethical sense, of the woman taken in adultery—which, if internal evidence were an infallible guide, might well be affirmed to be a typical example of the teachings of Jesus. Yet, say the revisers, pitilessly, "Most of the ancient authorities omit John vii. 53–viii. 11." Now let any reasonable man ask himself this question: If, after an approximate settlement of the canon of the New Testament, and even later than the fourth and fifth centuries, literary fabricators had the skill and the audacity to make such additions and interpolations as these, what may they have done when no one had thought of a canon; when oral tradition, still unfixed, was regarded as more valuable than such written records as may have existed in the latter portion of the first century? Or, to take the other alternative, if those who gradually settled the canon did not know of the existence of the oldest codices which have come down to us; or if, knowing them, they rejected their authority, what is to be thought of their competency as critics of the text?

People who object to free criticism of the Christian Scriptures forget that they are what they are in virtue of very free criticism; unless the advocates of inspiration are prepared to affirm that the majority of influential ecclesiastics during several centuries were safeguarded against error. For, even granting that some books of the period were inspired, they were certainly few amongst many, and those who selected the canonical

books, unless they themselves were also inspired, must be regarded in the light of mere critics, and, from the evidence they have left of their intellectual habits, very uncritical critics. When one thinks that such delicate questions as those involved fell into the hands of men like Papias (who believed in the famous millenarian grape story); of Irenæus with his "reasons" for the existence of only four Gospels; and of such calm and dispassionate judges as Tertullian, with his "Credo quia impossibile": the marvel is that the selection which constitutes our New Testament is as free as it is from obviously objectionable matter. The apocryphal Gospels certainly deserve to be apocryphal; but one may suspect that a little more critical discrimination would have enlarged the Apocrypha not inconsiderably.

At this point a very obvious objection arises and deserves full and candid consideration. It may be said that critical scepticism carried to the length suggested is historical pyrrhonism; that if we are altogether to discredit an ancient or a modern historian, because he has assumed fabulous matter to be true, it will be as well to give up paying any attention to history. It may be said, and with great justice, that Eginhard's "Life of Charlemagne" is none the less trustworthy because of the astounding revelation of credulity, of lack of judgment, and even of respect for the eighth commandment, which he has unconsciously made in the "History of the Translation of the Blessed Martyrs Marcellinus and Paul." Or, to go no further back than the last number of the *Nineteenth Century*, surely that excellent lady, Miss Strickland, is not to be refused all credence, because of the myth about the second James's remains, which she seems to have unconsciously invented.

Of course this is perfectly true. I am afraid there is no man alive whose witness could be accepted, if the condition precedent were proof that he had never invented and promulgated a myth. In the minds of all of us there are little

places here and there, like the indistinguishable spots on a rock, which give foothold to moss or stonecrop; on which, if the germ of a myth fall, it is certain to grow, without in the least degree affecting our accuracy or truthfulness elsewhere. Sir Walter Scott knew that he could not repeat a story without, as he said, "giving it a new hat and stick." Most of us differ from Sir Walter only in not knowing about this tendency of the mythopœic faculty to break out unnoticed. But it is also perfectly true that the mythopœic faculty is not equally active in all minds, nor in all regions and under all conditions of the same mind. David Hume was certainly not so liable to temptation as the Venerable Bede, or even as some recent historians who could be mentioned; and the most imaginative of debtors, if he owes five pounds, never makes an obligation to pay a hundred out of it. The rule of common sense is *prima facie* to trust a witness in all matters, in which neither his self-interest, his passions, his prejudices, nor that love of the marvellous, which is inherent to a greater or less degree in all mankind, are strongly concerned; and, when they are involved, to require corroborative evidence in exact proportion to the contravention of probability by the thing testified.

Now, in the Gadarene affair, I do not think I am unreasonably sceptical, if I say that the existence of demons who can be transferred from a man to a pig, does thus contravene probability. Let me be perfectly candid. I admit I have no *a priori* objection to offer. There are physical things, such as *tenia* and *trichina*, which can be transferred from men to pigs, and *vice versa*, and which do undoubtedly produce most diabolical and deadly effects on both. For anything I can absolutely prove to the contrary, there may be spiritual things capable of the same transmigration, with like effects. Moreover I am bound to add that perfectly truthful persons, for whom I have the greatest respect, believe in stories about spirits of the present

day, quite as improbable as that we are considering.

So I declare, as plainly as I can, that I am unable to show cause why these transferable devils should not exist; nor can I deny that, not merely the whole Roman Church, but mafy Wacean "infidels" of no mean repute, do honestly and firmly believe that the activity of such like demonic beings is in full swing in this year of grace 1889.

Nevertheless, as good Bishop Butler says, "probability is the guide of life"; and it seems to me that this is just one of the cases in which the canon of credibility and testimony, which I have ventured to lay down, has full force. So that, with the most entire respect for many (by no means for all) of our witnesses for the truth of demonology, ancient and modern, I conceive their evidence on this particular matter to be ridiculously insufficient to warrant their conclusion.¹

After what has been said, I do not think that any sensible man, unless he happen to be angry, will accuse me of "contradicting the Lord and His Apostles" if I reiterate my total disbelief in the whole Gadarene story. But, if that story is discredited, all the other stories of demoniac possession fall under suspicion. And if the belief in demons and demoniac possession, which forms

¹ Their arguments, in the long run, are always reducible to one form. Otherwise trustworthy witnesses affirm that such and such events took place. These events are inexplicable, except the agency of "spirits" is admitted. Therefore "spirits" were the cause of the phenomena.

And the heads of the reply are always the same. Remember Goethe's aphorism: "Alles factische ist schon Theorie." Trustworthy witnesses are constantly deceived, or deceive themselves, in their interpretation of sensible phenomena. No one can prove that the sensible phenomena, in these cases, could be caused only by the agency of spirits: and there is abundant ground for believing that they may be produced in other ways. Therefore, the utmost that can be reasonably asked for, on the evidence as it stands, is suspension of judgment. And, on the necessity for even that suspension, reasonable men may differ, according to their views of probability.

the sombre background of the whole picture of primitive Christianity, presented to us in the New Testament, is shaken, what is to be said, in any case, of the uncorroborated testimony of the Gospels with respect to "the unseen world"?

I am not aware that I have been influenced by any more bias in regard to the Gadarene story than I have been in dealing with other cases of like kind the investigation of which has interested me. I was brought up in the strictest school of evangelical orthodoxy; and when I was old enough to think for myself I started upon my journey of inquiry with little doubt about the general truth of what I had been taught; and with that feeling of the unpleasantness of being called an "infidel" which, we are told, is so right and proper. Near my journey's end, I find myself in a condition of something more than mere doubt about these matters.

In the course of other inquiries, I have had to do with fossil remains which looked quite plain at a distance, and became more and more indistinct as I tried to define their outline by close inspection. There was something there—something which, if I could win assurance about it, might mark a new epoch in the history of the earth; but, study as long as I might, certainty eluded my grasp. So has it been with me in my efforts to define the grand figure of Jesus as it lies in the primary strata of Christian literature. Is he the kindly, peaceful Christ depicted in the Catacombs? Or is he the stern Judge who frowns above the altar of SS. Cosmas and Damianus? Or can he be rightly represented by the bleeding ascetic, broken down by physical pain, of too many mediæval pictures? Are we to accept the Jesus of the second, or the Jesus of the fourth Gospel, as the true Jesus? What did he really say and do; and how much that is attributed to him, in speech and action, is the embroidery of the various parties into which his followers tended to split themselves

within twenty years of his death, when even the threefold tradition was nascent?

If any one will answer these questions for me with something more to the point than feeble talk about the "cowardice of agnosticism," I shall be deeply his debtor. Unless and until they are satisfactorily answered, I say of agnosticism in this matter, "*J'y suis, et j'y reste.*"

But, as we have seen, it is asserted that I have no business to call myself an agnostic; that, if I am not a Christian I am an infidel; and that I ought to call myself by that name of "unpleasant significance." Well, I do not care much what I am called by other people, and if I had at my side all those who, since the Christian era, have been called infidels by other folks, I could not desire better company. If these are my ancestors, I prefer, with the old Frank, to be with them wherever they are. But there are several points in Dr. Wace's contention which must be elucidated before I can even think of undertaking to carry out his wishes. I must, for instance, know what a Christian is. Now what is a Christian? By whose authority is the signification of that term defined? Is there any doubt that the immediate followers of Jesus, the "sect of the Nazarenes," were strictly orthodox Jews differing from other Jews not more than the Sadducees, the Pharisees, and the Essenes differed from one another; in fact, only in the belief that the Messiah, for whom the rest of their nation waited, had come? Was not their chief, "James, the brother of the Lord," revered alike by Sadducee, Pharisee, and Nazarene? At the famous conference which, according to the Acts, took place at Jerusalem, does not James declare that "myriads" of Jews, who, by that time, had become Nazarenes, were "all zealous for the Law"? Was not the name of "Christian" first used to denote the converts to the doctrine promulgated by Paul and Barnabas at Antioch? Does the subsequent history of Christianity leave any doubt that

from this time forth, the "little rift within the lute" caused by the new teaching, developed, if not inaugurated, at Antioch, grew wider and wider, until the two types of doctrine irreconcilably diverged? Did not the primitive Nazarenism, or Ebionism, develop into the Nazarethism, and Ebionism, and Elkasaitism of later ages, and finally die out in obscurity and condemnation, as damnable heresy; while the younger doctrine thrived and pushed out its shoots into that endless variety of sects, of which the three strongest survivors are the Roman and Greek Churches and modern Protestantism?

Singular state of things! If I were to profess the doctrine which was held by "James, the brother of the Lord," and by every one of the "myriads" of his followers and co-religionists in Jerusalem up to twenty or thirty years after the Crucifixion (and one knows not how much later at Pella), I should be condemned with unanimity, as an ebionising heretic by the Roman, Greek, and Protestant Churches! And, probably, this hearty and unanimous condemnation of the creed, held by those who were in the closest personal relation with their Lord, is almost the only point upon which they would be cordially of one mind. On the other hand, though I hardly dare imagine such a thing, I very much fear that the "pillars" of the primitive Hierosolymitan Church would have considered Dr. Wace an infidel. No one can read the famous second chapter of Galatians and the book of Revelation without seeing how narrow was even Paul's escape from a similar fate. And, if ecclesiastical history is to be trusted, the thirty-nine articles, be they right or wrong, diverge from the primitive doctrine of the Nazarenes vastly more than even Pauline Christianity did.

But, further than this, I have great difficulty in assuring myself that even James, "the brother of the Lord," and his "myriads" of Nazarenes, properly represented the doctrines of their Master. For it is constantly asserted by our

modern "pillars" that one of the chief features of the work of Jesus was the instauration of Religion by the abolition of what our sticklers for articles and liturgies, with unconscious humour, call the narrow restrictions of the Law. Yet, if James knew this, how could the bitter controversy with Paul have arisen; and why did not one or the other side quote any of the various sayings of Jesus, recorded in the Gospels, which directly bear on the question—sometimes, apparently, in opposite directions.

So, if I am asked to call myself an "infidel," I reply: To what doctrine do you ask me to be faithful? Is it that contained in the Nicene and the Athanasian Creeds? My firm belief is that the Nazarenes, say of the year 40, headed by James, would have stopped their ears and thought worthy of stoning the audacious man who propounded it to them. Is it contained in the so-called Apostles' Creed? I am pretty sure that even that would have created a recalcitrant commotion at Pella in the year 70 among the Nazarenes of Jerusalem, who had fled from the soldiers of Titus. And yet, if the unadulterated tradition of the teachings of "the Nazarene" were to be found anywhere, it surely should have been amidst those no very aged disciples who may have heard them as they were delivered.

Therefore, however sorry I may be to be unable to demonstrate that, if necessary, I should not be afraid to call myself an "infidel," I cannot do it. "Infidel" is a term of reproach, which Christians and Mahommedans, in their modesty, agree to apply to those who differ from them. If he had only thought of it, Dr. Wace might have used the term "miscreant," which, with the same etymological signification, has the advantage of being still more "unpleasant" to the persons to whom it is applied. But why should a man be expected to call himself a "miscreant" or an "infidel"? That St. Patrick "had two birthdays because he was a twin" is a reasonable and intelligible

utterance beside that of the man who should declare himself to be an infidel, on the ground of denying his own belief. It may be logically, if not ethically, defensible that a Christian should call a Mahomedan an infidel and *vice versa*; but, on Dr. Wace's principles, both ought to call themselves infidels, because each applies the term to the other.

Now I am afraid that all the Mahomedan world would agree in reciprocating that appellation to Dr. Wace himself. I once visited the Hazar Mosque, the great University of Mahomedanism, in Cairo, in ignorance of the fact that I was unprovided with proper authority. A swarm of angry undergraduates, as I suppose I ought to call them, came buzzing about me and my guide; and if I had known Arabic, I suspect that "dog of an infidel" would have been by no means the most "unpleasant" of the epithets showered upon me, before I could explain and apologise for the mistake. If I had had the pleasure of Dr. Wace's company on that occasion, the indiscriminate followers of the Prophet would, I am afraid, have made no difference between us; not even if they had known that he was the head of an orthodox Christian seminary. And I have not the smallest doubt that even one of the learned mollahs, if his grave courtesy would have permitted him to say anything offensive to men of another mode of belief, would have told us that he wondered we did not find it "very unpleasant" to disbelieve in the Prophet of Islam.

From what precedes, I think it becomes sufficiently clear that Dr. Wace's account of the origin of the name of "Agnostic" is quite wrong. Indeed, I am bound to add that very slight effort to discover the truth would have convinced him that, as a matter of fact, the term arose otherwise. I am loath to go over an old story once more; but more than one object which I have in view will be served by telling it a little more fully than it has yet been told.

Looking back nearly fifty years, I see

myself as a boy, whose education has been interrupted, and who intellectually was left, for some years, altogether to his own devices. At that time I was a voracious and omnivorous reader; a dreamer and speculator of the first water, well endowed with that splendid courage in attacking any and every subject, which is the blessed compensation of youth and inexperience. Among the books and essays, on all sorts of topics from metaphysics to heraldry, which I read at this time, two left indelible impressions on my mind. One was Guizot's "History of Civilisation," the other was Sir William Hamilton's essay "On the Philosophy of the Unconditioned," which I came upon, by chance, in an odd volume of the *Edinburgh Review*. The latter was certainly strange reading for a boy, and I could not possibly have understood a great deal of it;¹ nevertheless I devoured it with avidity, and it stamped upon my mind the strong conviction that, on even the most solemn and important of questions, men are apt to take cunning phrases for answers; and that the limitation of our faculties, in a great number of cases, renders real answers to such questions, not merely actually impossible, but theoretically inconceivable.

Philosophy and history having laid hold of me in this eccentric fashion, have never loosened their grip. I have no pretension to be an expert in either subject; but the turn for philosophical and historical reading, which rendered Hamilton and Guizot attractive to me, has not only filled many lawful leisure hours, and still more sleepless ones, with the repose of changed mental occupation, but has not unfrequently disputed my proper work-time with my liege lady, Natural Science. In this way I have found it possible to cover a good deal of ground in the territory of

¹ Yet I must somehow have laid hold of the pith of the matter, for, many years afterwards, when Dean Mansel's Bampton Lectures were published, it seemed to me I already knew all that this eminently agnostic thinker had to tell me.

philosophy; and all the more easily that I have never cared much about A's or B's opinions, but have rather sought to know what answer he had to give to the questions I had to put to him—that of the limitation of possible knowledge being the chief. The ordinary examiner, with his "State the views of So-and-so," would have flooded me at any time. If he had said what do *you* think about any given problem, I might have got on fairly well.

The reader who has had the patience to follow the enforced, but unwilling, egotism of this veritable history (especially if his studies have led him in the same direction), will now see why my mind steadily gravitated towards the conclusions of Hume and Kant, so well stated by the latter in a sentence, which I have quoted elsewhere.

"The greatest and perhaps the sole use of all philosophy of pure reason is, after all, merely negative, since it serves not as an organon for the enlargement [of knowledge], but as a discipline for its delimitation; and, instead of discovering truth, has only the modest merit of preventing error."¹

When I reached intellectual maturity and began to ask myself whether I was an atheist, a theist, or a pantheist; a materialist or an idealist; a Christian or a freethinker; I found that the more I learned and reflected, the less ready was the answer; until, at last, I came to the conclusion that I had neither art nor part with any of these denominations, except the last. The one thing in which most of these good people were agreed was the one thing in which I differed from them. They were quite sure they had attained a certain "gnosis,"—had, more or less successfully, solved the problem of existence; while I was quite sure I had not, and had a pretty strong conviction that the problem was insoluble. And, with Hume and Kant on my side, I could not think myself presumptuous

in holding fast by that opinion. Like Dante,

Nel mezzo del cammin di nostra vita
Mi ritrovai per una selva oscura,

but, unlike Dante, I cannot add,

Che la dritta via era smarrita.

On the contrary, I had, and have, the firmest conviction that I never left the "verace via"—the straight road; and that this road led nowhere else but into the dark depths of a wild and tangled forest. And though I have found leopards and lions in the path; and though I have made abundant acquaintance with the hungry wolf, that "with privy paw devours apace and nothing said," as another great poet says of the ravening beast; and though no friendly spectre has even yet offered his guidance, I was, and am, minded to go straight on, until I either come out on the other side of the wood, or find there is no other side to it, at least, none attainable by me.

This was my situation when I had the good fortune to find a place among the members of that remarkable confraternity of antagonists, long since deceased, but of green and pious memory, the Metaphysical Society. Every variety of philosophical and theological opinion was represented there, and expressed itself with entire openness; most of my colleagues were *-ists* of one sort or another; and, however kind and friendly they might be, I, the man without a rag of a label to cover himself with, could not fail to have some of the uneasy feelings which must have beset the historical fox when, after leaving the trap in which his tail remained, he presented himself to his normally elongated companions. So I took thought, and invented what I conceived to be the appropriate title of "agnostic." It came into my head as suggestively antithetic to the "gnostic" of Church history, who professed to know so much about the very things of which I was ignorant; and I took the earliest opportunity of parading it at our Society, to show that I, too, had a tail, like the other foxes. To my great satisfaction, the

¹ *Kritik der reinen Vernunft*. Edit. Hartenstein, p. 256.

term took ; and when the *Spectator* had stood godfather to it, any suspicion in the minds of respectable people that a knowledge of its parentage might have awakened was, of course, completely lulled.

That is the history of the origin of the terms "agnostic" and "agnosticism" ; and it will be observed that it does not quite agree with the confident assertion of the reverend Principal of King's College, that "the adoption of the term agnostic is only an attempt to shift the issue, and that it involves a mere evasion" in relation to the Church and Christianity.¹

The last objection (I rejoice as much as my readers must do, that it is the last) which I have to take to Dr. Wace's deliverance before the Church Congress arises, I am sorry to say, on a question of morality.

"It is, and it ought to be," authoritatively declares this official representative of Christian ethics, "an unpleasant thing for a man to have to say plainly that he does not believe in Jesus Christ" (*l.c.* p. 254).

Whether it is so depends, I imagine, a good deal on whether the man was brought up in a Christian household or not. I do not see why it should be "unpleasant" for a Mahomedan or Buddhist to say so. But that "it ought to be" unpleasant for any man to say anything which he sincerely, and after due deliberation, believes, is, to my mind, a proposition of the most profoundly immoral character. I verily believe that the great good which has been effected in the world by Christianity has been largely counteracted by the pestilent doctrine on which all the Churches have insisted, that honest disbelief in their more or less astonishing creeds is a moral offence, indeed a sin of the deepest dye, deserving and involving the same future retribution as murder and robbery. If we could only see, in one view, the torrents of

hypocrisy and cruelty, the mass slaughter, the violations of every obligation of humanity, which have flowed from this source along the course of the history of Christian nations, our worst imaginations of Hell would pale beside the vision.

A thousand times, no ! It ought not to be unpleasant to say that which one honestly believes or disbelieves. That it so constantly is painful to do so, is quite enough obstacle to the progress of mankind in that most valuable of all qualities, honesty of word or of deed, without erecting a sad concomitant of human weakness into something to be admired and cherished. The bravest of soldiers often, and very naturally, "feel it unpleasant" to go into action ; but a court-martial which did its duty would make short work of the officer who promulgated the doctrine that his men ought to feel their duty unpleasant.

I am very well aware, as I suppose most thoughtful people are in these times, that the process of breaking away from old beliefs is extremely unpleasant ; and I am much disposed to think that the encouragement, the consolation, and the peace afforded to earnest believers in even the worst forms of Christianity are of great practical advantage to them. What deductions must be made from this gain on the score of the harm done to the citizen by the ascetic other-worldliness of logical Christianity ; to the ruler, by the hatred, malice, and all uncharitableness of sectarian bigotry ; to the legislator, by the spirit of exclusiveness and domination of those that count themselves pillars of orthodoxy ; to the philosopher, by the restraints on the freedom of learning and teaching which every Church exercises, when it is strong enough ; to the conscientious soul, by the introspective hunting after sins of the mint and cummin type, the fear of theological error, and the overpowering terror of possible damnation, which have accompanied the Churches like their shadow, I need not now consider.

¹ *Report of the Church Congress, Manchester, 1885, p. 252.*

They are assuredly not small. If the comforts lose heavily on the one side, they gain a good deal on the other. People who talk about the comforts of belief appear to forget its discomforts; they ignore the fact that the Christianity of the Churches is something more than faith in the ideal personality of Jesus, which they create for themselves, *plus* so much as can be carried into practice, without disorganising civil society, of the maxims of the Sermon on the Mount. Trip in morals or in doctrine (especially in doctrine), without due repentance or retraction, or fail to get properly baptised before you die, and a *plébiscite* of the Christians of Europe, if they were true to their creeds, would affirm your everlasting damnation by an immense majority.

Preachers, orthodox and heterodox, din into our ears that the world cannot get on without faith of some sort. There is a sense in which that is as eminently as obviously true; there is another, in which, in my judgment, it is as eminently as obviously false, and it seems to me that the hortatory, or pulpit, mind is apt to oscillate between the false and the true meanings, without being aware of the fact.

It is quite true that the ground of every one of our actions, and the validity of all our reasonings, rest upon the great act of faith, which leads us to take the experience of the past as a safe guide in our dealings with the present and the future. From the nature of ratiocination, it is obvious that the axioms, on which it is based, cannot be demonstrated by ratiocination. It is also a trite observation that, in the business of life, we constantly take the most serious action upon evidence of an utterly insufficient character. But it is surely plain that faith is not necessarily entitled to dispense with ratiocination because ratiocination cannot dispense with faith as a starting-point; and that because we are often obliged, by the pressure of events, to act on very bad evidence, it does not follow that it is

proper to act on such evidence when the pressure is absent.

The writer of the epistle to the Hebrews tells us that "faith is the assurance of things hoped for, the proving of things not seen." In the authorised version, "substance" stands for "assurance," and "evidence" for "proving." The question of the exact meaning of the two words, *ὑπόστασις* and *ἐλεγχος*, affords a fine field of discussion for the scholar and the metaphysician. But I fancy we shall be not far from the mark if we take the writer to have had in his mind the profound psychological truth, that men constantly feel certain about things for which they strongly hope, but have no evidence, in the legal or logical sense of the word; and he calls this feeling "faith." I may have the most absolute faith that a friend has not committed the crime of which he is accused. In the early days of English history, if my friend could have obtained a few more compurgators of a like robust faith, he would have been acquitted. At the present day, if I tendered myself as a witness on that score, the judge would tell me to stand down, and the youngest barrister would smile at my simplicity. Miserable indeed is the man who has not such faith in some of his fellow-men—only less miserable than the man who allows himself to forget that such faith is not, strictly speaking, evidence; and when his faith is disappointed, as will happen now and again, turns Timon and blames the universe for his own blunders. And so, if a man can find a friend, the hypostasis of all his hopes, the mirror of his ethical ideal, in the Jesus of any, or all, of the Gospels, let him live by faith in that ideal. Who shall or can forbid him? But let him not delude himself with the notion that his faith is evidence of the objective reality of that in which he trusts. Such evidence is to be obtained only by the use of the methods of science, as applied to history and to literature, and it amounts at present to very little.

THE CHRISTIAN TRADITION IN RELATION TO JUDAIC CHRISTIANITY

[FROM "AGNOSTICISM: A REJOINDER," 1889]

THE most constant reproach which is launched against persons of my way of thinking is that it is all very well for us to talk about the deductions of scientific thought, but what are the poor and the uneducated to do? Has it ever occurred to those who talk in this fashion, that their creeds and the articles of their several confessions, their determination of the exact nature and extent of the teachings of Jesus, their expositions of the real meaning of that which is written in the Epistles (to leave aside all questions concerning the Old Testament), are nothing more than deductions which, at any rate, profess to be the result of strictly scientific thinking, and which are not worth attending to unless they really possess that character? If it is not historically true that such and such things happened in Palestine eighteen centuries ago, what becomes of Christianity? And what is historical truth but that of which the evidence bears strict scientific investigation? I do not call to mind any problem of natural science which has come under my notice which is more difficult, or more curiously interesting as a mere problem, than that of the origin of the Synoptic Gospels and that of the historical value of the narratives which they contain. The Christianity of the Churches stands or falls by the results of the purely scientific investigation of these questions. They were first taken up, in a purely scientific spirit, about a century ago; they have been studied over and over again by men of vast knowledge and critical acumen; but he would be a rash man who should assert that any solution of these problems, as yet formulated, is exhaustive. The most that can be said is that certain prevalent solutions are certainly false, while others are more or less probably true.

If I am doing my best to rouse my countrymen out of their dogmatic slumbers, it is not that they may be amused by seeing who gets the best of it in a contest between a "scientist" and a theologian. The serious question is whether theological men of science, or theological special pleaders, are to have the confidence of the general public; it is the question whether a country in which it is possible for a body of excellent clerical and lay gentlemen to discuss, in public meeting assembled, how much it is desirable to let the congregations of the faithful know of the results of biblical criticism, is likely to wake up with anything short of the grasp of a rough lay hand upon its shoulder; it is the question whether the New Testament books, being, as I believe they were, written and compiled by people who, according to their lights, were perfectly sincere, will not, when properly studied as ordinary historical documents, afford us the means of self-criticism. And it must be remembered that the New Testament books are not responsible for the doctrine invented by the Churches that they are anything but ordinary historical documents. The author of the third gospel tells us, as straightforwardly as a man can, that he has no claim to any other character than that of an ordinary compiler and editor, who had before him the works of many and variously qualified predecessors.

In my former papers, according to Dr. Wace, I have evaded giving an answer to his main proposition, which he states as follows—

Apart from all disputed points of criticism, no one practically doubts that our Lord lived, and that He died on the cross, in the most intense sense of filial relation to His Father in Heaven,

and that He bore testimony to that Father's providence, love, and grace towards mankind. The Lord's Prayer affords a sufficient evidence on these points. If the Sermon on the Mount alone be added, the whole unseen world, of which the Agnostic refuses to know anything, stands unveiled before us. . . . If Jesus Christ preached that Sermon, made those promises, and taught that prayer, then any one who says that we know nothing of God, or of a future life, or of an unseen world, says that he does not believe Jesus Christ (pp. 354-355).

Again—

The main question at issue, in a word, is one which Professor Huxley has chosen to leave entirely on one side—whether, namely, allowing for the utmost uncertainty on other points of the criticism to which he appeals, there is any reasonable doubt that the Lord's Prayer and the Sermon on the Mount afford a true account of our Lord's essential belief and cardinal teaching (p. 355).

I certainly was not aware that I had evaded the questions here stated; indeed I should say that I have indicated my reply to them pretty clearly; but, as Dr. Wace wants a plainer answer, he shall certainly be gratified. If, as Dr. Wace declares it is, his "whole case is involved in" the argument as stated in the latter of these two extracts, so much the worse for his whole case. For I am of opinion that there is the gravest reason for doubting whether the "Sermon on the Mount" was ever preached, and whether the so-called "Lord's Prayer" was ever prayed, by Jesus of Nazareth. My reasons for this opinion are, among others, these:—There is now no doubt that the three Synoptic Gospels, so far from being the work of three independent writers, are closely inter-dependent,¹ and that in one of two ways. Either all three contain, as their foundation, versions, to a large extent verbally identical, of one and the same tradition; or two of them are thus closely dependent on the third;

¹ I suppose this is what Dr. Wace is thinking about when he says that I allege that there "is no visible escape" from the supposition of an *Ur-Marcus* (p. 367). That a "theologian of repute" should confound an indisputable fact with one of the modes of explaining that fact is not so singular as those who are unaccustomed to the ways of theologians might imagine.

and the opinion of the majority of the best critics has of late years more and more converged towards the conviction that our canonical second gospel (the so-called "Mark's" Gospel) is that which most closely represents the primitive groundwork of the three.¹ That I take to be one of the most valuable results of New Testament criticism, of immeasurably greater importance than the discussion about dates and authorship.

But if, as I believe to be the case, beyond any rational doubt or dispute, the second gospel is the nearest extant representative of the oldest tradition, whether written or oral, how comes it that it contains neither the "Sermon on the Mount" nor the "Lord's Prayer," those typical embodiments, according to Dr. Wace, of the "essential belief and cardinal teaching" of Jesus? Not only does "Mark's" gospel fail to contain the "Sermon on the Mount," or anything but a very few of the sayings contained in that collection; but, at the point of the history of Jesus where the "Sermon" occurs in "Matthew," there is in "Mark" an apparently unbroken narrative from the calling of James and John to the healing of Simon's wife's mother. Thus the oldest tradition not only ignores the "Sermon on the Mount," but, by implication, raises a probability against its being delivered when and where the

¹ Any examiner whose duty it has been to examine into a case of "copying" will be particularly well prepared to appreciate the force of the case stated in that most excellent little book, *The Common Tradition of the Synoptic Gospels*, by Dr. Abbott and Mr. Rushbrooke (Macmillan, 1884). To those who have not passed through such painful experiences I may recommend the brief discussion of the genuineness of the "Casket Letters" in my friend Mr. Skelton's interesting book, *Maitland of Lethington*. The second edition of Holtzmann's *Lehrbuch*, published in 1886, gives a remarkably fair and full account of the present results of criticism. At p. 366 he writes that the present burning question is whether the "relatively primitive narrative and the root of the other synoptic texts is contained in Matthew or in Mark. It is only on this point that properly-informed (*sachkundige*) critics differ," and he decides in favour of Mark.

later "Matthew" inserts it in his compilation.

And still more weighty is the fact that the third gospel, the author of which tells us that he wrote after "many" others had "taken in hand" the same enterprise; who should therefore have known the first gospel (if it existed), and was bound to pay to it the deference due to the work of an apostolic eye-witness (if he had any reason for thinking it was so)—this writer, who exhibits far more literary competence than the other two, ignores any "Sermon on the Mount," such as that reported by "Matthew," just as much as the oldest authority does. Yet "Luke" has a great many passages identical, or parallel, with those in "Matthew's" "Sermon on the Mount," which are, for the most part, scattered about in a totally different connection.

Interposed, however, between the nomination of the Apostles and a visit to Capernaum; occupying, therefore, a place which answers to that of the "Sermon on the Mount," in the first gospel, there is, in the third gospel a discourse which is as closely similar to the "Sermon on the Mount," in some particulars, as it is widely unlike it in others.

This discourse is said to have been delivered in a "plain" or "level place" (Luke vi. 17), and by way of distinction we may call it the "Sermon on the Plain."

I see no reason to doubt that the two Evangelists are dealing, to a considerable extent, with the same traditional material; and a comparison of the two "Sermons" suggests very strongly that "Luke's" version is the earlier. The correspondences between the two forbid the notion that they are independent. They both begin with a series of blessings, some of which are almost verbally identical. In the middle of each (Luke vi. 27-38, Matt. v. 43-48) there is a striking exposition of the ethical spirit of the command given in Leviticus xix. 18. And each ends with a passage con-

taining the declaration that a tree can be known by its fruit, and the parable of the house built on the sand. And while there are only 29 verses in the "Sermon on the Plain," there are 107 in the "Sermon on the Mount"; the excess in length of the latter being chiefly due to the long interpolations, one of 30 verses before, and one of 34 verses after, the middlemost parallelism with Luke. Under these circumstances it is quite impossible to admit that there is more probability that "Matthew's" version of the Sermon is historically accurate, than there is that Luke's version is so; and they cannot both be accurate.

"Luke" either knew the collection of loosely-connected and aphoristic utterances which appear under the name of the "Sermon on the Mount" in "Matthew"; or he did not. If he did not, he must have been ignorant of the existence of such a document as our canonical "Matthew," a fact which does not make for the genuineness, or the authority, of that book. If he did, he has shown that he does not care for its authority on a matter of fact of no small importance; and that does not permit us to conceive that he believed the first gospel to be the work of an authority to whom he ought to defer, let alone that of an apostolic eye-witness.

The tradition of the Church about the second gospel, which I believe to be quite worthless, but which is all the evidence there is for "Mark's" authorship, would have us believe that "Mark" was little more than the mouthpiece of the apostle Peter. Consequently, we are to suppose that Peter either did not know, or did not care very much for, that account of the "essential belief and cardinal teaching" of Jesus which is contained in the Sermon on the Mount; and, certainly, he could not have shared Dr. Wace's view of its importance.

¹ Holtzmann (*Die synoptischen Evangelien*, 1863, p. 75), following Ewald, argues that the "Source A" (= the threefold tradition, more or less) contained something that answered to the "Sermon on the Plain" immediately after

I thought that all fairly attentive and intelligent students of the gospels, to say nothing of theologians of reputation, knew these things. But how can any one who does know them have the conscience to ask whether there is "any reasonable doubt" that the Sermon on the Mount was preached by Jesus of Nazareth? If conjecture is permissible, where nothing else is possible, the most probable conjecture seems to be that "Matthew," having a *cento* of sayings attributed—rightly or wrongly it is impossible to say—to Jesus among his materials, thought they were, or might be, records of a continuous discourse, and put them in at the place he thought likeliest. Ancient historians of the highest character saw no harm in composing long speeches which never were spoken, and putting them into the mouths of statesmen and warriors; and I presume that whoever is represented by "Matthew" would have been grievously astonished to find that any one objected to his following the example of the best models accessible to him.

So with the "Lord's Prayer." Absent in our representative of the oldest tradition, it appears in both "Matthew" and "Luke." There is reason to believe that every pious Jew, at the commencement of our era, prayed three times a day, according to a formula which is embodied in the present "Schmone-Esre"¹ of the Jewish prayer-book. Jesus, who was assuredly, in all respects, a pious Jew, whatever else he may have been, doubtless did the same. Whether he modified the current formula, or whether the so-called "Lord's Prayer" is the prayer substituted for the "Schmone-Esre" in the congregations of the Gen-

words of our present "Mark," "And he cometh into a house" (iii. 19). But what conceivable motive could "Mark" have for omitting it? Hoffmann has no doubt, however, that the "Sermon on the Mount" is a compilation, or, as he calls it in his recently-published *Lehrbuch* (p. 370), "an artificial mosaic work."
 1. Richter, *Geschichte des jüdischen Volkes*, Zweites Theil, p. 384.

tiles, is a question which can hardly be answered.

In a subsequent passage of Dr. Wace's article (p. 356) he adds to the list of the verities which he imagines to be unassailable, "The Story of the Passion." I am not quite sure what he means by this. I am not aware that any one (with the exception of certain ancient heretics) has propounded doubts as to the reality of the crucifixion; and certainly I have no inclination to argue about the precise accuracy of every detail of that pathetic story of suffering and wrong. But, if Dr. Wace means, as I suppose he does, that that which, according to the orthodox view, happened after the crucifixion, and which is, in a dogmatic sense, the most important part of the story, is founded on solid historical proofs, I must beg leave to express a diametrically opposite conviction.

What do we find when the accounts of the events in question, contained in the three Synoptic gospels, are compared together? In the oldest, there is a simple, straightforward statement which, for anything that I have to urge to the contrary, may be exactly true. In the other two, there is, round this possible and probable nucleus, a mass of accretions of the most questionable character.

The cruelty of death by crucifixion depended very much upon its lingering character. If there were a support for the weight of the body, as not unfrequently was the practice, the pain during the first hours of the infliction was not, necessarily, extreme; nor need any serious physical symptoms, at once, arise from the wounds made by the nails in the hands and feet, supposing they were nailed, which was not invariably the case. When exhaustion set in, and hunger, thirst, and nervous irritation had done their work, the agony of the sufferer must have been terrible; and the more terrible that, in the absence of any effectual disturbance of the machinery of physical life, it might

be prolonged for many hours, or even days. Temperate, strong men, such as were the ordinary Galilean peasants, might live for several days on the cross. It is necessary to bear these facts in mind when we read the account contained in the fifteenth chapter of the second gospel.

Jesus was crucified at the third hour (xv. 25), and the narrative seems to imply that he died immediately after the ninth hour (v. 34). In this case, he would have been crucified only six hours; and the time spent on the cross cannot have been much longer, because Joseph of Arimathæa must have gone to Pilate, made his preparations, and deposited the body in the rock-cut tomb before sunset, which, at that time of the year, was about the twelfth hour. That any one should die after only six hours' crucifixion could not have been at all in accordance with Pilate's large experience of the effects of that method of punishment. It, therefore, quite agrees with what might be expected, that Pilate "marvelled if he were already dead" and required to be satisfied on this point by the testimony of the Roman officer who was in command of the execution party. Those who have paid attention to the extraordinarily difficult question, What are the indisputable signs of death?—will be able to estimate the value of the opinion of a rough soldier on such a subject, even if his report to the Procurator were in no wise affected by the fact that the friend of Jesus, who anxiously awaited his answer, was a man of influence and of wealth.

The inanimate body, wrapped in linen, was deposited in a spacious,¹ cool rock chamber, the entrance of which was closed, not by a well-fitting door, but by a stone rolled against the opening, which would of course allow free passage of air. A little more than thirty-six hours afterwards (Friday, 6 P.M., to Sunday, 6 A.M., or a little after) three

¹ Spacious, because a young man could sit in it "on the right side" (xv. 5), and therefore with plenty of room to spare.

women visit the tomb and find it empty. And they are told by a young man "arrayed in a white robe" that Jesus is gone to his native country of Galilee, and that the disciples and Peter will find him there.

Thus it stands, plainly recorded, in the oldest tradition that, for any evidence to the contrary, the sepulchre may have been emptied at any time during the Friday or Saturday nights. If it is said that no Jew would have violated the Sabbath by taking the former course, it is to be recollected that Joseph of Arimathæa might well be familiar with that wise and liberal interpretation of the fourth commandment, which permitted works of mercy to men—nay, even the drawing of an ox or an ass out of a pit—on the Sabbath. At any rate, the Saturday night was free to the most scrupulous of observers of the Law.

These are the facts of the case as stated by the oldest extant narrative of them. I do not see why any one should have a word to say against the inherent probability of that narrative; and, for my part, I am quite ready to accept it as an historical fact, that so much and no more is positively known of the end of Jesus of Nazareth. On what grounds can a reasonable man be asked to believe any more? So far as the narrative in the first gospel, on the one hand, and those in the third gospel and the Acts, on the other, go beyond what is stated in the second gospel, they are hopelessly discrepant with one another. And this is the more significant because the pregnant phrase "some doubted," in the first gospel, is ignored in the third.

But it is said that we have the witness Paul speaking to us directly in the Epistles. There is little doubt that we have, and a very singular witness he is. According to his own showing, Paul, in the vigour of his manhood, with every means of becoming acquainted, at first hand, with the evidence of eye-witnesses, not merely refused to credit them, but "persecuted the Church of God and

made havoc of it." The reasoning of Stephen fell dead upon the acute intellect of this zealot for the traditions of his fathers: his eyes were blind to the ecstatic illumination of the martyr's countenance "as it had been the face of an angel;" and when, at the words "Behold, I see the heavens opened and the Son of Man standing on the right hand of God," the murderous mob rushed upon and stoned the rapt disciple of Jesus, Paul ostentatiously made himself their official accomplice.

Yet this strange man, because he has a vision one day, at once, and with equally headlong zeal, flies to the opposite pole of opinion. And he is most careful to tell us that he abstained from any re-examination of the facts.

Immediately I conferred not with flesh and blood; neither went I up to Jerusalem to them which were Apostles before me; but I went away into Arabia. (Galatians i. 16, 17.)

I do not presume to quarrel with Paul's procedure. If it satisfied him, that was his affair; and, if it satisfies any one else, I am not called upon to dispute the right of that person to be satisfied. But I certainly have the right to say that it would not satisfy me in like case; that I should be very much ashamed to pretend that it could, or ought to, satisfy me; and that I can entertain but a very low estimate of the value of the evidence of people who are to be satisfied in this fashion, when questions of objective fact, in which their faith is interested, are concerned. So that when I am called upon to believe a great deal more than the oldest gospel tells me about the final events of the history of Jesus on the authority of Paul (1 Corinthians xv. 5-8) I must pause. Did he think it, at any subsequent time, worth while "To confer with flesh and blood," or, in modern phrase, to re-examine the facts for himself? or was he ready to accept anything that fitted in with his preconceived ideas? Does he mean, when he speaks of all the appearances of Jesus after the crucifixion as if

they were of the same kind, that they were all visions, like the manifestation to himself? And, finally, how is this account to be reconciled with those in the first and third gospels—which, as we have seen, disagree with one another?

Until these questions are satisfactorily answered, I am afraid that, so far as I am concerned, Paul's testimony cannot be seriously regarded, except as it may afford evidence of the state of traditional opinion at the time at which he wrote, say between 55 and 60 A.D.; that is, more than twenty years after the event; a period much more than sufficient for the development of any amount of mythology about matters of which nothing was really known. A few years later, among the contemporaries and neighbours of the Jews, and, if the most probable interpretation of the Apocalypse can be trusted, among the followers of Jesus also, it was fully believed, in spite of all the evidence to the contrary, that the Emperor Nero was not really dead, but that he was hidden away somewhere in the East, and would speedily come again at the head of a great army, to be revenged upon his enemies.¹

Thus, I conceive that I have shown cause for the opinion that Dr. Wace's challenge touching the Sermon on the Mount, the Lord's Prayer, and the Passion was more valorous than discreet. After all this discussion, I am still at the agnostic point. Tell me, first, what Jesus can be proved to have been, said, and done, and I will say whether I believe him, or in him,² or not. As Dr. Wace admits that I have dissipated his lingering shade of unbelief about the

¹ King Herod had not the least difficulty in supposing the resurrection of John the Baptist—"John, whom I beheaded, he is risen" (Mark vi. 16).

² I am very sorry for the interpolated "in," because citation ought to be accurate in small things as in great. But what difference it makes whether one "believes Jesus" or "believes in Jesus" much thought has not enabled me to discover. If you "believe him" you must believe him to be what he professed to be—that is, "believe in him;" and if you "believe in him" you must necessarily "believe him."

sedevilment of the Gadarene pigs, he might have done something to help mine. Instead of that, he manifests a total want of conception of the nature of the obstacles which impede the conversion of his "infidels."

The truth I believe to be, that the difficulties in the way of arriving at a sure conclusion as to these matters, from the Sermon on the Mount, the Lord's Prayer, or any other data offered by the Synoptic gospels (and *a fortiori* from the fourth gospel), are insuperable. Every one of these records is coloured by the prepossessions of those among whom the primitive traditions arose, and of those by whom they were collected and edited: and the difficulty of making allowance for these prepossessions is enhanced by our ignorance of the exact dates at which the documents were first put together; of the extent to which they have been subsequently worked over and interpolated; and of the historical sense, or want of sense, and the dogmatic tendencies of their compilers and editors. Let us see if there is any other road which will take us into something better than negation.

There is a widespread notion that the "primitive Church," while under the guidance of the Apostles and their immediate successors, was a sort of dogmatic dovecot, pervaded by the most loving unity and doctrinal harmony. Protestants, especially, are fond of attributing to themselves the merit of being nearer "the Church of the Apostles" than their neighbours; and they are the less to be excused for their strange delusion because they are great readers of the documents which prove the exact contrary. The fact is that, in the course of the first three centuries of its existence, the Church rapidly underwent a process of evolution of the most remarkable character, the final stage of which is far more different from the first than Anglicanism is from Quakerism. The key to the comprehension of the problem of the origin of that which is now called "Christianity," and its relation to Jesus of Nazareth, lies here. Nor can we

arrive at any sound conclusion as to what it is probable that Jesus actually said, did, without being clear on this point. By far the most important and consequently influential steps in the evolution of Christianity took place in the course of the century, more or less, which followed upon the crucifixion. It is almost the darkest period of Church history, but, most fortunately, the beginning and the end of the period are brightly illuminated by the contemporary evidence of two writers of whose historical existence there is no doubt,¹ and against the genuineness of whose most important works there is no widely-admitted objection. These are Justin, the philosopher and martyr, and Paul, the Apostle to the Gentiles. I shall call upon these witnesses only to testify to the condition of opinion among those who called themselves disciples of Jesus in their time.

Justin, in his Dialogue with Trypho the Jew, which was written somewhere about the middle of the second century, enumerates certain categories of persons who, in his opinion, will, or will not, be saved.² These are:—

1. Orthodox Jews who refuse to believe that Jesus is the Christ. *Not Saved.*
2. Jews who observe the Law; believe Jesus to be the Christ; but who insist on the observance of the Law by Gentile converts. *Not Saved.*
3. Jews who observe the Law; believe Jesus to be the Christ, and hold that Gentile converts need not observe the Law. *Saved* (in Justin's opinion; but some of his fellow-Christians think the contrary).
4. Gentile converts to the belief in Jesus as the Christ, who observe the Law. *Saved* (possibly).
5. Gentile believers in Jesus as the

¹ True for Justin: but there is a school of theological critics, who more or less question the historical reality of Paul, and the genuineness of even the four cardinal epistles.

² See *Dial. cum Tryphone*, § 47 and § 35. It is to be understood that Justin does not arrange these categories in order, as I have done.

1. Those who do not observe the Law (except so far as the refusal of idol sacrifices), but do not consider themselves heretics. *Saved* (Justin's own view).

2. Gentile believers who do not observe the Law, except in refusing idol sacrifices, and hold those who do observe it to be heretics. *Saved*.

3. Gentiles who believe Jesus to be the Christ and call themselves Christians, but who eat meats sacrificed to idols. *Not Saved*.

4. Gentiles who disbelieve in Jesus as the Christ. *Not Saved*.

Justin does not consider Christians who believe in the natural birth of Jesus, of whom he implies that there is a respectable minority, to be heretics, though he himself strongly holds the preternatural birth of Jesus and his pre-existence as the "Logos" or "Word." He conceives the Logos to be a second God, inferior to the first, unknowable God, with respect to whom Justin, like Philo, is a complete agnostic. The Holy Spirit is not regarded by Justin as a separate personality, and is often mixed up with the "Logos." The doctrine of the natural immortality of the soul is, for Justin, a heresy; and he is as firm a believer in the resurrection of the body, as in the speedy Second Coming and the establishment of the millennium.

This pillar of the Church in the middle of the second century—a much-travelled native of Samaria—was certainly well acquainted with Rome, probably with Alexandria; and it is likely that he knew the state of opinion throughout the length and breadth of the Christian world as well as any man of his time. If the various categories above enumerated are arranged in a series thus:—

Justin's Christianity

Orthodox Judæo-Christianity <i>Judaism</i>	Idolothytic Pagan-Christianity <i>Paganism</i>
I. II. III. IV. V. VI. VII. VIII.	

It is obvious that they form a gradational series from orthodox Judaism, on the extreme left, to Paganism, whether

philosophic or popular, on the extreme right; and it will further be observed that, while Justin's conception of Christianity is very broad, he rigorously excludes two classes of persons who, in his time, called themselves Christians, namely, those who insist on circumcision and other observances of the Law on the part of Gentile converts: that is to say, the strict Judæo-Christians (II.): and, on the other hand, those who assert the lawfulness of eating meat offered to idols—whether they are Gnostic or not (VII.). These last I have called "idolothytic" Christians, because I cannot devise a better name, not because it is strictly defensible etymologically.

At the present moment, I do not suppose there is an English missionary in any heathen land who would trouble himself whether the materials of his dinner had been previously offered to idols or not. On the other hand I suppose there is no Protestant sect within the pale of orthodoxy, to say nothing of the Roman and Greek Churches, which would hesitate to declare the practice of circumcision and the observance of the Jewish Sabbath and dietary rules, shockingly heretical.

Modern Christianity has, in fact, not only shifted far to the right of Justin's position, but it is of much narrower compass.

	Justin								
	Judæo-Christianity				Modern Christianity				Paganism
Judaism	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	

For, though it includes VI., and even, in saint and relic worship, cuts a "monstrous cantle" out of paganism, it excludes, not only all Judæo-Christians, but all who doubt that such are heretics. Ever since the thirteenth century, the Inquisition would have cheerfully burned, and in Spain did abundantly burn, all persons who came under the categories II., III., IV., V. And the wolf would play the same havoc now, if it could only get its blood-stained jaws free from the muzzle imposed by the secular arm.

Further, there is not a Protestant body except the Unitarian, which would not declare Justin himself a heretic, on account of his doctrine of the inferior godship of the Logos; while I am very much afraid that, in strict logic, Dr. Wace would be under the necessity, so painful to him, of calling him an "infidel," on the same and on other grounds.

Now let us turn to our other authority. If there is any result of critical investigations of the sources of Christianity which is certain,¹ it is that Paul of Tarsus wrote the Epistle to the Galatians somewhere between the years 55 and 60 A.D., that is to say, roughly, twenty, or five-and-twenty years after the crucifixion. If this is so, the Epistle to the Galatians is one of the oldest, if not the very oldest, of extant documentary evidences of the state of the primitive Church. And, be it observed, if it is Paul's writing, it unquestionably furnishes us with the evidence of a participator in the transactions narrated. With the exception of two or three of the other Pauline Epistles, there is not one solitary book in the New Testament of the authorship and authority of which we have such good evidence.

And what is the state of things we find disclosed? A bitter quarrel, in his account of which Paul by no means minces matters, or hesitates to hurl defiant sarcasms against those who were "reputed to be pillars": James, "the brother of the Lord," Peter, the rock on whom Jesus is said to have built his Church, and John, "the beloved disciple." And no deference toward "the rock" withholds Paul from charging Peter to his face with "dissimulation."

The subject of the hot dispute was simply this. Were Gentile converts bound to obey the Law or not? Paul answered in the negative; and, acting upon his opinion, he had created at

Antioch (and elsewhere) a special "Christian" community, the sole qualifications for admission into which were the confession of the belief that Jesus was the Messiah, and baptism upon that confession. In the epistle in question, Paul puts this—his "gospel," as he calls it—in its most extreme form. Not only does he deny the necessity of conformity with the Law, but he declares such conformity to have a negative value. "Behold, I, Paul, say unto you, that if ye receive circumcision, Christ will profit you nothing" (Galatians v. 2). He calls the legal observances "beggarly rudiments," and anathematizes every one who preaches to the Galatians any other gospel than his own. That is to say, by direct consequence, he anathematizes the Nazarenes of Jerusalem, whose zeal for the Law is testified by James in a passage of the Acts cited further on. In the first Epistle to the Corinthians, dealing with the question of eating meat offered to idols, it is clear that Paul himself thinks it a matter of indifference; but he advises that it should not be done, for the sake of the weaker brethren. On the other hand, the Nazarenes of Jerusalem most strenuously opposed Paul's "gospel," insisting on every convert becoming a regular Jewish proselyte, and consequently on his observance of the whole Law; and this party was led by James and Peter and John (Galatians ii. 9). Paul does not suggest that the question of principle was settled by the discussion referred to in Galatians. All he says is, that it ended in the practical agreement that he and Barnabas should do as they had been doing, in respect to the Gentiles; while James and Peter and John should deal in their own fashion with Jewish converts. Afterwards, he complains bitterly of Peter, because, when on a visit to Antioch, he, at first, inclined to Paul's view and ate with the Gentile converts; but when "certain came from James," "drew back, and separated himself, fearing them that were of the circumcision." And the rest of the Jews

¹ I guard myself against being supposed to affirm that even the four cardinal epistles of Paul may not have been seriously tampered with. See note 1, p. 102 above.

assembled likewise with him; insomuch that even Barnabas was carried away with their dissimulation" (Galatians ii. 12-13).

There is but one conclusion to be drawn from Paul's account of this famous dispute, the settlement of which determined the fortunes of the nascent religion. It is that the disciples at Jerusalem, headed by "James, the Lord's brother," and by the leading apostles, Peter and John, were strict Jews, who had objected to admit any converts into their body, unless these, either by birth, or by becoming proselytes, were also strict Jews. In fact, the sole difference between James and Peter and John, with the body of the disciples whom they led and the Jews by whom they were surrounded, and with whom they, for many years, shared the religious observances of the Temple, was that they believed that the Messiah, whom the leaders of the nation yet looked for, had already come in the person of Jesus of Nazareth.

The Acts of the Apostles is hardly a very trustworthy history; it is certainly of later date than the Pauline Epistles, supposing them to be genuine. And the writer's version of the conference of which Paul gives so graphic a description, if that is correct, is unmistakably coloured with all the art of a reconciler, anxious to cover up a scandal. But it is none the less instructive on this account. The judgment of the "council" delivered by James is that the Gentile converts shall merely "abstain from things sacrificed to idols, and from blood and from things strangled, and from fornication." But notwithstanding the accommodation in which the writer of the Acts would have us believe, the Jerusalem Church held to its endeavour to retain the observance of the Law. Long after the conference, some time after the writing of the Epistles to the Galatians and Corinthians, and immediately after the despatch of that to the Romans, Paul makes his last visit to Jerusalem, and presents himself to James

and all the elders. And this is what the Acts tells us of the interview:—

And they said unto him, Thou seest, brother, how many thousands [or myriads] there are among the Jews of them which have believed; and they are all zealous for the law; and they have been informed concerning thee, that thou teachest all the Jews which are among the Gentiles to forsake Moses, telling them not to circumcise their children, neither to walk after the customs. (Acts xxi. 20, 21.)

They therefore request that he should perform a certain public religious act in the Temple, in order that

all shall know that there is no truth in the things whereof they have been informed concerning thee; but that thou thyself walkest orderly, keeping the law (*ibid.* 24).¹

How far Paul could do what he was here requested to do, and what the writer of the Acts goes on to say, with a clear conscience, if he writes the Epistles to the Galatians and the Corinthians I may leave any candid reader of these epistles to decide. The point to which I wish to direct attention is the declaration that the Jerusalem Church, led by the brother of Jesus and by his personal disciples and friends, twenty years and more after his death, consisted of strict and zealous Jews.

Tertullus, the orator, caring very little about the internal dissensions of the followers of Jesus, speaks of Paul as a "ringleader of the sect of the Nazarenes" (Acts xxiv. 5), which must have affected James much in the same way as it would have moved the Archbishop of Canterbury, in George Fox's day, to hear the latter called a "ringleader of the sect of Anglicans." In fact, "Nazarene" was, as is well known, the distinctive appellation applied to Jesus; his immediate followers were known as Nazarenes; while the congregation of the disciples, and, later, of converts at Jerusalem—the Jerusalem Church—was emphatically the "sect of

¹ [Paul, in fact, is required to commit in Jerusalem, an act of the same character as that which he brands as "dissimulation" on the part of Peter in Antioch.]

the Nazarenes," no more, in itself, to be regarded as anything outside Judaism than the sect of the Sadducees, or that of the Essenes¹. In fact, the tenets of both the Sadducees and the Essenes diverged much more widely from the Pharisaic standard of orthodoxy than Nazarenism did.

Let us consider the position of affairs now (A.D. 50-60) in relation to that which obtained in Justin's time, a century later. It is plain that the Nazarenes—presided over by James, "the brother of the Lord," and comprising within their body all the twelve apostles—belonged to Justin's second category of "Jews who observe the Law, believe Jesus to be the Christ, but who insist on the observance of the Law by Gentile converts," up till the time at which the controversy reported by Paul arose. They then, according to Paul, simply allowed him to form his congregations of non-legal Gentile converts at Antioch and elsewhere; and it would seem that it was to these converts, who would come under Justin's fifth category, that the title of "Christian" was first applied. If any of these Christians had acted upon the more than half-permission given by Paul, and had eaten meats offered to idols, they would have belonged to Justin's seventh category.

Hence, it appears that, if Justin's opinion, which was probably that of the Church generally in the middle of the second century, was correct, James and Peter and John and their followers could not be saved; neither could Paul, if he carried into practice his views as to the indifference of eating meats offered to idols. Or, to put the matter another way, the centre of gravity of orthodoxy, which is at the extreme right of the series in the nineteenth century, was at the extreme left, just before the middle of the first century, when the "sect of the Nazarenes" constituted the whole church founded by Jesus and the

apostles; while, in the time of Justin, it lay midway between the two. It is therefore a profound mistake to imagine that the Judæo-Christians (Nazarenes and Ebionites) of later times were heretical outgrowths from a primitive universalist "Christianity." On the contrary, the universalist "Christianity" is an outgrowth from the primitive, purely Jewish, Nazarenism; which, gradually eliminating all the ceremonial and dietary parts of the Jewish law, has thrust aside its parent, and all the intermediate stages of its development, into the position of damnable heresies.

Such being the case, we are in a position to form a safe judgment of the limits within which the teaching of Jesus of Nazareth must have been confined. Ecclesiastical authority would have us believe that the words which are given at the end of the first Gospel, "Go ye, therefore, and make disciples of all the nations, baptizing them in the name of the Father and of the Son and of the Holy Ghost," are part of the last commands of Jesus, issued at the moment of his parting with the eleven. If so, Peter and John must have heard these words; they are too plain to be misunderstood; and the occasion is too solemn for them ever to be forgotten. Yet the "Acts" tells us that Peter needed a vision to enable him so much as to baptize Cornelius; and Paul, in the Galatians, knows nothing of words which would have completely borne him out as against those who, though they heard, must be supposed to have either forgotten, or ignored them. On the other hand, Peter and John, who are supposed to have heard the "Sermon on the Mount," know nothing of the saying that Jesus had not come to destroy the Law, but that every jot and tittle of the Law must be fulfilled, which surely would have been pretty good evidence for their view of the question.

We are sometimes told that the personal friends and daily companions of Jesus remained zealous Jews and opposed

¹ All this was quite clearly pointed out by Ritschl nearly forty years ago. See *Die Entstehung der alt-katholischen Kirche* (1850), p. 108.

innovations, because they were not of heart and dull of comprehension. This hypothesis is hardly in accordance with the concomitant faith of those who adopt it, in the miraculous insight and superhuman sagacity of their Master; nor do I see any way of getting it to harmonise with the orthodox postulate; namely, that Matthew was the author of the first gospel and John of the fourth. If that is so, then, most assuredly, Matthew was no dullard; and as for the fourth gospel—a theosophic romance of the first order—it could have been written by none but a man of remarkable literary capacity, who had drunk deep of Alexandrian philosophy. Moreover, the doctrine of the writer of the fourth gospel is more remote from that of the “sect of the Nazarenes” than is that of Paul himself. I am quite aware that orthodox critics have been capable of maintaining that John, the Nazarene, who was probably well past fifty years of age, when he is supposed to have written the most thoroughly Judaising book in the New Testament—the Apocalypse—in the roughest of Greek, underwent an astounding metamorphosis of both doctrine and style by the time he reached the ripe age of ninety or so, and provided the world with a history in which the acutest critic cannot [always] make out where the speeches of Jesus end and the text of the narrative begins; while that narrative is utterly irreconcilable, in regard to matters of fact, with that of his fellow-apostle, Matthew.

The end of the whole matter is this:—The “sect of the Nazarenes,” the brother and the immediate followers of Jesus, commissioned by him as apostles, and those who were taught by them up to the year 50 A.D., were not “Christians” in the sense in which that term has been understood ever since its asserted origin at Antioch, but Jews—strict orthodox Jews—whose belief in the Messiahship of Jesus never led to their exclusion from the Temple services, nor would have shut them out from the wide embrace of

Judaism.¹ The open proclamation of their special view about the Messiah was doubtless offensive to the Pharisees, just as rampant Low Churchism is offensive to bigoted High Churchism in our own country; or as any kind of dissent is offensive to fervid religionists of all creeds. To the Sadducees, no doubt, the political danger of any Messianic movement was serious; and they would have been glad to put down Nazarenism, lest it should end in useless rebellion against their Roman masters, like that other Galilean movement headed by Judas, a generation earlier. Galilee was always a hotbed of seditious enthusiasm against the rule of Rome; and high priest and procurator alike had need to keep a sharp eye upon natives of that district. On the whole, however, the Nazarenes were but little troubled for the first twenty years of their existence; and the undying hatred of the Jews against those later converts, whom they regarded as apostates and fautors of a sham Judaism, was awakened by Paul. From their point of view, he was a mere renegade Jew, opposed alike to orthodox Judaism and to orthodox Nazarenism; and whose teachings threatened Judaism with destruction. And, from their point of view, they were quite right. In the course of a century, Pauline influences had a large share in driving primitive Nazarenism from being the very heart of the new faith into the position of scouted error; and the spirit of Paul's doctrine continued its work of driving Christianity farther and farther away from Judaism, until “meats offered to idols” might be eaten without scruple, while the Nazarene methods of observing even the Sabbath, or the Passover, were branded with the mark of Judaizing heresy.

But if the primitive Nazarenes of whom the Acts speaks were orthodox Jews, what sort of probability can there

¹ “If every one was baptized as soon as he acknowledged Jesus to be the Messiah, the first Christians can have been aware of no other essential differences from the Jews.”—Zeller, *Porträge* (1865), p. 26

be that Jesus was anything else? How can he have founded the universal religion which was not heard of till twenty years after his death?¹ That Jesus possessed, in a rare degree, the gift of attaching men to his person and to his fortunes; that he was the author of many a striking saying, and the advocate of equity, of love, and of humility; that he may have disregarded the subtleties of the bigots for legal observance, and appealed rather to those noble conceptions of religion which constituted the pith and kernel of the teaching of the great prophets of his nation seven hundred years earlier; and that, in the last scenes of his career, he may have embodied the ideal sufferer of Isaiah, may

¹ Dr. Harnack, in the lately-published second edition of his *Dogmengeschichte*, says (p. 39), "Jesus Christ brought forward no new doctrine"; and again, (p. 65), "It is not difficult to set against every portion of the utterances of Jesus an observation which deprives him of originality." See also Zusatz 4, on the same page.

be, as I think it is, extremely probable. But all this involves not a step beyond the borders of orthodox Judaism. Again, who is to say whether Jesus proclaimed himself the veritable Messiah, expected by his nation since the appearance of the pseudo-prophetic work of Daniel, a century and a half before his time; or whether the enthusiasm of his followers gradually forced him to assume that position?

But one thing is quite certain: if that belief in the speedy second coming of the Messiah which was shared by all parties in the primitive Church, whether Nazarene or Pauline; which Jesus is made to prophesy, over and over again, in the Synoptic gospels; and which dominated the life of Christians during the first century after the crucifixion;—if he believed and taught that, then assuredly he was under an illusion, and he is responsible for that which the mere effluxion of time has demonstrated to be a prodigious error.

AGNOSTICISM AND CHRISTIANITY

Nemo ergo ex me scire querat, quod me nescire scio, nisi forte ut nescire discat.—AUGUSTINUS, *De Civ. Dei*, xii. 7.

THE people who call themselves "Agnostics" have been charged with doing so because they have not the courage to declare themselves "Infidels." It has been insinuated that they have adopted a new name in order to escape the unpleasantness which attaches to their proper denomination. To this wholly erroneous imputation, I have replied by showing that the term "Agnostic" did, as a matter of fact, arise in a manner which negatives it; and my statement has not been, and cannot be, refuted. Moreover, speaking for myself, and without impugning the right of any other person to use the term in another sense, I further say that Agnosticism is not properly described as a "negative" creed, nor indeed as a

creed of any kind, except in so far as it expresses absolute faith in the validity of a principle, which is as much ethical as intellectual. This principle may be stated in various ways, but they all amount to this: that it is wrong for a man to say that he is certain of the objective truth of any proposition unless he can produce evidence which logically justifies that certainty. This is what Agnosticism asserts; and, in my opinion, it is all that is essential to Agnosticism. That which Agnostics deny and repudiate, as immoral, is the contrary doctrine, that there are propositions which men ought to believe, without logically satisfactory evidence; and that reprobation ought to attach to the profession of disbelief in such inadequately

supported propositions. The justification of the Agnostic principle lies in the success which follows upon its application, whether in the field of natural, or in that of civil, history; and in the fact that, so far as these topics are concerned, no sane man thinks of denying its validity.

Still speaking for myself, I add, that though Agnosticism is not, and cannot be, a creed, except in so far as its general principle is concerned; yet that the application of that principle results in the denial of, or the suspension of judgment concerning, a number of propositions respecting which our contemporary ecclesiastical "gnostics" profess entire certainty. And, in so far as these ecclesiastical persons can be justified in their old-established custom (which many nowadays think more honoured in the breach than the observance) of using opprobrious names to those who differ from them, I fully admit their right to call me and those who think with me "Infidels"; all I have ventured to urge is that they must not expect us to speak of ourselves by that title.

The extent of the region of the uncertain, the number of the problems the investigation of which ends in a verdict of not proven, will vary according to the knowledge and the intellectual habits of the individual Agnostic. I do not very much care to speak of anything as "unknowable."¹ What I am sure about is that there are many topics about which I know nothing; and which, so far as I can see, are out of reach of my faculties. But whether these things are knowable by any one else is exactly one of those matters which is beyond my knowledge, though I may have a tolerably strong opinion as to the probabilities of the case. Relatively to myself, I am quite sure that the region of uncertainty—the nebulous country in which words play the part of realities—is far more ex-

tensive than I could wish. Materialism and Idealism; Theism and Atheism; the doctrine of the soul and its mortality or immortality—appear in the history of philosophy like the shades of Scandinavian heroes, eternally slaying one another and eternally coming to life again in a metaphysical "Nifelheim." It is getting on for twenty-five centuries, at least, since mankind began seriously to give their minds to these topics. Generation after generation, philosophy has been doomed to roll the stone uphill; and, just as all the world swore it was at the top, down it has rolled to the bottom again. All this is written in innumerable books; and he who will toil through them will discover that the stone is just where it was when the work began. Hume saw this; Kant saw it; since their time, more and more eyes have been cleansed of the films which prevented them from seeing it; until now the weight and number of those who refuse to be the prey of verbal mystifications has begun to tell in practical life.

It was inevitable that a conflict should arise between Agnosticism and Theology; or, rather, I ought to say, between Agnosticism and Ecclesiasticism. For Theology, the science, is one thing; and Ecclesiasticism, the championship of a foregone conclusion¹ as to the truth of a particular form of Theology, is another. With scientific Theology, Agnosticism has no quarrel. On the contrary, the Agnostic, knowing too well the influence of prejudice and idiosyncrasy, even on those who desire most earnestly to be impartial, can wish for nothing more urgently than that the scientific theologian should not only be at perfect liberty to thresh out the matter in his own fashion; but that he should, if he can, find flaws in the Agnostic position; and, even if demonstration is not to be had, that he should put, in their full force, the

¹ I confess that, long ago, I once or twice made this mistake; even to the waste of a capital 'U.' 1893.

¹ "Let us maintain, before we have proved. This seeming paradox is the secret of happiness" (Dr. Newman: Tract 85, p. 85).

grounds of the conclusions he thinks probable. The scientific theologian admits the Agnostic principle, however widely his results may differ from those reached by the majority of Agnostics.

But, as between Agnosticism and Ecclesiasticism, or, as our neighbours across the Channel call it, Clericalism, there can be neither peace nor truce. The Cleric asserts that it is morally wrong not to believe certain propositions, whatever the results of a strict scientific investigation of the evidence of these propositions. He tells us "that religious error is, in itself, of an immoral nature."¹ He declares that he has prejudged certain conclusions, and looks upon those who show cause for arrest of judgment as emissaries of Satan. It necessarily follows that, for him, the attainment of faith, not the ascertainment of truth, is the highest aim of mental life. And, on careful analysis of the nature of this faith, it will too often be found to be, not the mystic process of unity with the Divine, understood by the religious enthusiast; but that which the candid simplicity of a Sunday scholar once defined it to be. "Faith," said this unconscious plagiarist of Tertullian, "is the power of saying you believe things which are incredible."

Now I, and many other Agnostics, believe that faith, in this sense, is an abomination; and though we do not indulge in the luxury of self-righteousness so far as to call those who are not of our way of thinking hard names, we do feel that the disagreement between ourselves and those who hold this doctrine is even more moral than intellectual. It is desirable there should be an end of any mistakes on this topic. If our clerical opponents were clearly aware of the real state of the case, there would be an end of the curious delusion, which often appears between the lines of their writings, that those whom they are so fond of calling "Infidels" are people who not only ought to be, but in their hearts are, ashamed of themselves. It

¹ Dr. Newman, *Essay on Development*, p. 357.

would be discourteous to do more than hint the antipodal opposition to this pleasant dream of theirs to facts.

The clerics and their lay allies commonly tell us, that if we refuse to admit that there is good ground for expressing definite convictions about certain topics, the bonds of human society will dissolve and mankind lapse into savagery. There are several answers to this assertion. One is that the bonds of human society were formed without the aid of their theology; and, in the opinion of not a few competent judges, have been weakened rather than strengthened by a good deal of it. Greek science, Greek art, the ethics of old Israel, the social organisation of old Rome, contrived to come into being, without the help of any one who believed in a single distinctive article of the simplest of the Christian creeds. The science, the art, the jurisprudence, the chief political and social theories, of the modern world have grown out of those of Greece and Rome—not by favour of, but in the teeth of, the fundamental teachings of early Christianity, to which science, art, and any serious occupation with the things of this world, were alike despicable.

Again, all that is best in the ethics of the modern world, in so far as it has not grown out of Greek thought, or Barbarian manhood, is the direct development of the ethics of old Israel. There is no code of legislation, ancient or modern, at once so just and so merciful, so tender to the weak and poor, as the Jewish law; and, if the Gospels are to be trusted, Jesus of Nazareth himself declared that he taught nothing but that which lay implicitly, or explicitly, in the religious and ethical system of his people.

And the scribe said unto him, Of a truth, Teacher, thou hast well said that he is one; and there is none other but he, and to love him with all the heart, and with all the understanding, and with all the strength, and to love his neighbour as himself, is much more than all whole burnt offerings and sacrifices. (Mark xii. 32, 33.)

Here is the briefest of summaries of the teaching of the prophets of Israel.

...fourth century; does the Teacher, whose doctrine is thus set forth in his presence, repudiate the exposition? No, we are told, on the contrary, that Jesus saw that he "answered discreetly," and replied, "Thou art not far from the kingdom of God."

So that I think that even if the creeds, from the so-called "Apostles" to the so-called "Athanasian," were swept into oblivion; and even if the human race should arrive at the conclusion that, whether a bishop washes a cup or leaves it unwashed, is not a matter of the least consequence, it will get on very well. The causes which have led to the development of morality in mankind, which have guided or impelled us all the way from the savage to the civilised state, will not cease to operate because a number of ecclesiastical hypotheses turn out to be baseless. And, even if the absurd notion that morality is more the child of speculation than of practical necessity and inherited instinct, had any foundation; if all the world is going to thief, murder, and otherwise misconduct itself as soon as it discovers that certain portions of ancient history are mythical; what is the relevance of such arguments to any one who holds by the Agnostic principle?

Surely, the attempt to cast out Beelzebub by the aid of Beelzebub is a hopeful procedure as compared to that of preserving morality by the aid of immorality. For I suppose it is admitted that an Agnostic may be perfectly sincere, may be competent, and may have studied the question at issue with as much care as his clerical opponents. But, if the Agnostic really believes what he says, the "dreadful consequence" arguer (consistently, I admit, with his own principles) virtually asks him to abstain from telling the truth, or to say what he believes to be untrue, because of the supposed injurious consequences to morality.

Beloved brethren, that we may be moderately moral, before all things let us be moderate in the sum total of many an ex-

hortation addressed to the "Insider." Now, as I have already pointed out, we cannot oblige our exhorters. We leave the practical application of the convenient doctrines of "Reserve" and "Non-natural interpretation" to those who invented them.

I trust that I have now made amends for any ambiguity, or want of fulness, in my previous exposition of that which I hold to be the essence of the Agnostic doctrine. Henceforward, I might hope to hear no more of the assertion that we are necessarily Materialists, Idealists, Atheists, Theists, or any other *isms*, if experience had led me to think that the proved falsity of a statement was any guarantee against its repetition. And those who appreciate the nature of our position will see, at once, that when Ecclesiasticism declares that we ought to believe this, that, and the other, and are very wicked if we don't, it is impossible for us to give any answer but this: We have not the slightest objection to believe anything you like, if you will give us good grounds for belief; but, if you cannot, we must respectfully refuse, even if that refusal should wreck morality and insure our own damnation several times over. We are quite content to leave that to the decision of the future. The course of the past has impressed us with the firm conviction that no good ever comes of falsehood, and we feel warranted in refusing even to experiment in that direction.

In the course of the present discussion it has been asserted that the "Sermon on the Mount" and the "Lord's Prayer" furnish a summary and condensed view of the essentials of the teaching of Jesus of Nazareth, set forth by himself. Now this supposed *Summa* of Nazarene theology distinctly affirms the existence of a spiritual world, of a Heaven, and of a Hell of fire; it teaches the Fatherhood of God and the malignity of the Devil; it declares the superintending providence of the former and our need of deliverance from the machinations of the latter, it

affirms the fact of demoniac possession and the power of casting out devils by the faithful. And, from these premises, the conclusion is drawn, that those Agnostics who deny that there is any evidence of such a character as to justify certainty, respecting the existence and the nature of the spiritual world, contradict the express declarations of Jesus. I have replied to this argumentation by showing that there is strong reason to doubt the historical accuracy of the attribution to Jesus of either the "Sermon on the Mount" or the "Lord's Prayer"; and, therefore, that the conclusion in question is not warranted, at any rate, on the grounds set forth.

But, whether the Gospels contain trustworthy statements about this and other alleged historical facts or not, it is quite certain that from them, taken together with the other books of the New Testament, we may collect a pretty complete exposition of that theory of the spiritual world which was held by both Nazarenes and Christians; and which was undoubtedly supposed by them to be fully sanctioned by Jesus, though it is just as clear that they did not imagine it contained any revelation by him of something heretofore unknown. If the pneumatological doctrine which pervades the whole New Testament is nowhere systematically stated, it is everywhere assumed. The writers of the Gospels and of the Acts take it for granted, as a matter of common knowledge; and it is easy to gather from these sources a series of propositions, which only need arrangement to form a complete system.

In this system, Man is considered to be a duality formed of a spiritual element, the soul; and a corporeal¹ element,

¹ It is by no means to be assumed that "spiritual" and "corporeal" are exact equivalents of "immaterial" and "material" in the minds of ancient speculators on these topics. The "spiritual body" of the risen dead (1 Cor. xv.) is not the "natural" "flesh and blood" body. Paul does not teach the resurrection of the body in the ordinary sense of the word "body"; a fact, often overlooked, but pregnant with many consequences.

the body. And this duality is repeated in the Universe, which consists of a corporeal world embraced and interpenetrated by a spiritual world. The former consists of the earth, as its principal and central constituent, with the subsidiary sun, planets, and stars. Above, the earth is the air, and below is the watery abyss. Whether the heaven, which is conceived to be above the air, and the hell in, or below, the subterranean deeps, are to be taken as corporeal or incorporeal is not clear. However this may be, the heaven and the air, the earth and the abyss, are peopled by innumerable beings analogous in nature to the spiritual element in man, and these spirits are of two kinds, good and bad. The chief of the good spirits, infinitely superior to all the others, and their creator, as well as the creator of the corporeal world and of the bad spirits, is God. His residence is heaven, where he is surrounded by the ordered hosts of good spirits; his angels, or messengers, and the executors of his will throughout the universe.

On the other hand, the chief of the bad spirits is Satan, *the devil par excellence*. He and his company of demons are free to roam through all parts of the universe, except the heaven. These bad spirits are far superior to man in power and subtlety; and their whole energies are devoted to bringing physical and moral evils upon him, and to thwarting, so far as their power goes, the benevolent intentions of the Supreme Being. In fact, the souls and bodies of men form both the theatre and the prize of an incessant warfare between the good and the evil spirits—the powers of light and the powers of darkness. By leading Eve astray, Satan brought sin and death upon mankind. As the gods of the heathen, the demons are the founders and maintainers of idolatry; as the "powers of the air" they afflict mankind with pestilence and famine; as "unclean spirits" they cause disease of mind and body.

The significance of the appearance of

in the capacity of the Messiah, Christ, is the reversal of the satanic work by putting an end to both sin and death. He announces that the kingdom of God is at hand, when the "Prince of this world" shall be finally "cast out" (John xii. 31) from the cosmos, as Jesus, during his earthly career, cast him out from individuals. Then will Satan and all his devilry, along with the wicked whom they have seduced to their destruction, be hurled into the abyss of unquenchable fire—there to endure continual torture, without a hope of winning pardon from the merciful God, their Father; or of moving the glorified Messiah to one more act of pitiful intercession; or even of interrupting, by a momentary sympathy with their wretchedness, the harmonious psalmody of their brother angels and men, eternally lapped in bliss unspeakable.

The strictest Protestant, who refuses to admit the existence of any source of Divine truth, except the Bible, will not deny that every point of the pneumatological theory here set forth has ample scriptural warranty. The Gospels, the Acts, the Epistles, and the Apocalypse assert the existence of the devil, of his demons and of Hell, as plainly as they do that of God and his angels and Heaven. It is plain that the Messianic and the Satanic conceptions of the writers of these books are the obverse and the reverse of the same intellectual coinage. If we turn from Scripture to the traditions of the Fathers and the confessions of the Churches, it will appear that, in this one particular, at any rate, time has brought about no important deviation from primitive belief. From Justin onwards, it may often be a fair question whether God, or the devil, occupies a larger share of the attention of the Fathers. It is the devil who instigates the Roman authorities to persecute; the gods and goddesses of paganism are devils, and idolatry itself is an invention of Satan; if a saint falls away from grace, it is by the seduction of the demon; if heresy arises, the devil

has suggested it; and some of the Fathers¹ go so far as to challenge the pagans to a sort of exorcising match, by way of testing the truth of Christianity. Mediaeval Christianity is at one with patristic, on this head. The masses, the clergy, the theologians, and the philosophers alike, live and move and have their being in a world full of demons, in which sorcery and possession are everyday occurrences. Nor did the Reformation make any difference. Whatever else Luther assailed, he left the traditional demonology untouched; nor could any one have entertained a more hearty and uncompromising belief in the devil, than he and, at a later period, the Calvinistic fanatics of New England did. Finally, in these last years of the nineteenth century, the demonological hypotheses of the first century are, explicitly or implicitly, held and occasionally acted upon by the immense majority of Christians of all confessions.

Only here and there has the progress of scientific thought, outside the ecclesiastical world, so far affected Christians, that they and their teachers fight shy of the demonology of their creed. They are fain to conceal their real disbelief in one half of Christian doctrine by judicious silence about it; or by flight to those refuges for the logically destitute, accommodation or allegory. But the faithful who fly to allegory in order to escape absurdity resemble nothing so much as the sheep in the fable who—to save their lives—jumped into the pit. The allegory pit is too commodious, is ready to swallow up so much more than one wants to put into it. If the story of the temptation is an allegory; if the early recognition of Jesus as the Son of God by the demons is an allegory; if the plain declaration of the writer of the first Epistle of John (iii. 8), "To this end

¹ Tertullian (*Apolog. adv. Gent.*, cap. xxiii.) thus challenges the Roman authorities: let them bring a possessed person into the presence of a Christian before their tribunal; and if the demon does not confess himself to be such, on the order of the Christian, let the Christian be executed out of hand.

the Son of God manifested, that He might destroy the works of the devil," is allegorical, then the Pauline version of the Fall may be allegorical, and still more the words of consecration of the Eucharist, or the promise of the second coming; in fact, there is not a dogma of ecclesiastical Christianity the scriptural basis of which may not be whittled away by a similar process.

As to accommodation, let any honest man who can read the New Testament ask himself whether Jesus and his immediate friends and disciples can be dishonoured more grossly than by the supposition that they said and did that which is attributed to them; while, in reality, they disbelieved in Satan and his demons, in possession and in exorcism? ¹

An eminent theologian has justly observed that we have no right to look at the propositions of the Christian faith with one eye open and the other shut. (Tract 85, p. 29.) It really is not permissible to see, with one eye, that Jesus is affirmed to declare the personality and the Fatherhood of God, His loving providence and His accessibility to prayer; and to shut the other to the no less definite teaching ascribed to Jesus, in regard to the personality and the misanthropy of the devil, his malignant watchfulness, and his subjection to exorcistic formulæ and rites. Jesus is made to say that the devil "was a murderer from the beginning" (John viii. 44) by the same authority as that upon which we depend for his asserted declaration that God is a spirit" (John iv. 24).

To those who admit the authority of the famous Vincentian dictum that the doctrine which has been held "always, everywhere, and by all" is to be received as authoritative, the demonology must possess a higher sanction than any other Christian dogma, except, perhaps, those of the Resurrection and of the Messiahship of Jesus; for it would be difficult to name any other points of doctrine on

¹ See the expression of orthodox opinion upon the "accommodation" subterfuge already cited above, pp. 85 and 86.

which the Nazarene does not stand as the Christian, and the different historical stages and contemporary subdivisions of Christianity from one another. If the demonology is accepted, there can be no reason for rejecting all those miracles in which demons play a part. The Gadarene story fits into the general scheme of Christianity; and the evidence for "Legion" and their doings is just as good as any other in the New Testament for the doctrine which the story illustrates.

It was with the purpose of bringing this great fact into prominence; of getting people to open both their eyes when they look at Ecclesiasticism; that I devoted so much space to that miraculous story which happens to be one of the best types of its class. And I could not wish for a better justification of the course I have adopted, than the fact that my heroically consistent adversary has declared his implicit belief in the Gadarene story and (by necessary consequence) in the Christian demonology as a whole. It must be obvious, by this time, that, if the account of the spiritual world given in the New Testament, professedly on the authority of Jesus, is true, then the demonological half of that account must be just as true as the other half. And, therefore, those who question the demonology, or try to explain it away, deny the truth of what Jesus said, and are, in ecclesiastical terminology, "Infidels" just as much as those who deny the spirituality of God. This is as plain as anything can well be, and the dilemma for my opponent was either to assert that the Gadarene pig-bedevilment actually occurred, or to write himself down an "Infidel." As was to be expected, he chose the former alternative; and I may express my great satisfaction at finding that there is one spot of common ground on which both he and I stand. So far as I can judge, we are agreed to state one of the broad issues between the consequences of agnostic principles (as I draw them), and the consequences of ecclesiastical dogmatism (as he accepts it), as follows:

Agnosticism says: The demonology of the Gospels is an essential part of the account of that spiritual world, the basis of which it declares to be certified by Jesus.

Agnosticism (*me jodge*) says: There is no good evidence of the existence of a demoniac spiritual world, and much reason for doubting it.

Hereupon the ecclesiastic may observe: Your doubt means that you disbelieve Jesus; therefore you are an "Infidel" instead of an "Agnostic." To which the agnostic may reply: No; for two reasons: first, because your evidence that Jesus said what you say he said is worth very little; and secondly, because a man may be an agnostic, in the sense of admitting he has no positive knowledge; and yet consider that he has more or less probable ground for accepting any given hypothesis about the spiritual world. Just as a man may frankly declare that he has no means of knowing whether the planets generally are inhabited or not, and yet may think one of the two possible hypotheses more likely than the other, so he may admit that he has no means of knowing anything about the spiritual world, and yet may think one or other of the current views on the subject, to some extent, probable.

The second answer is so obviously valid that it needs no discussion. I draw attention to it simply in justice to those agnostics who may attach greater value than I do to any sort of pneumatological speculations; and not because I wish to escape the responsibility of declaring that, whether Jesus sanctioned the demonological part of Christianity or not, I unhesitatingly reject it. The first answer, on the other hand, opens up the whole question of the claim of the biblical and other sources, from which hypotheses concerning the spiritual world are derived, to be regarded as unimpeachable historical evidence as to matters of fact.

Now, in respect of the trustworthiness of the Gospel narratives, I was anxious

to get rid of the common assumption that the determination of the authorship and of the dates of these works is a matter of fundamental importance. That assumption is based upon the notion that what contemporary witnesses say must be true, or, at least, has always a *prima facie* claim to be so regarded; so that if the writers of any of the Gospels were contemporaries of the events (and still more if they were in the position of eye-witnesses) the miracles they narrate must be historically true, and, consequently, the demonology which they involve must be accepted. But the story of the "Translation of the blessed martyrs Marcellinus and Petrus," and the other considerations (to which endless additions might have been made from the Fathers and the mediæval writers) set forth in a preceding essay, yield, in my judgment, satisfactory proof that, where the miraculous is concerned, neither considerable intellectual ability, nor undoubted honesty, nor knowledge of the world, nor proved faithfulness as civil historians, nor profound piety, on the part of eye-witnesses and contemporaries, affords any guarantee of the objective truth of their statements, when we know that a firm belief in the miraculous was ingrained in their minds, and was the pre-supposition of their observations and reasonings.

Therefore, although it be, as I believe, demonstrable that we have no real knowledge of the authorship, or of the date of composition of the Gospels, as they have come down to us, and that nothing better than more or less probable guesses can be arrived at on that subject, I have not cared to expend any space on the question. It will be admitted, I suppose, that the authors of the works attributed to Matthew, Mark, Luke, and John, whoever they may be, are personages whose capacity and judgment in the narration of ordinary events are not quite so well certified as those of Eginhard; and we have seen what the value of Eginhard's evidence is when the miraculous is in question.

I have been careful to explain that the arguments which I have used in the course of this discussion are not new; that they are historical and have nothing to do with what is commonly called science; and that they are all, to the best of my belief, to be found in the works of theologians of repute.

The position which I have taken up, that the evidence in favour of such miracles as those recorded by Eginhard, and consequently of mediæval demonology, is quite as good as that in favour of such miracles as the Gadarene, and consequently of Nazarene demonology, is none of my discovery. Its strength was, wittingly or unwittingly, suggested, a century and a half ago, by a theological scholar of eminence; and it has been, if not exactly occupied, yet so fortified with bastions and redoubts by a living ecclesiastical Vauban, that, in my judgment, it has been rendered impregnable. In the early part of the last century, the ecclesiastical mind in this country was much exercised by the question, not exactly of miracles, the occurrence of which in biblical times was axiomatic, but by the problem: When did miracles cease? Anglican divines were quite sure that no miracles had happened in their day, nor for some time past; they were equally sure that they happened sixteen or seventeen centuries earlier. And it was a vital question for them to determine at what point of time, between this *terminus a quo* and that *terminus ad quem*, miracles came to an end.

The Anglicans and the Romanists agreed in the assumption that the possession of the gift of miracle-working was *prima facie* evidence of the soundness of the faith of the miracle-workers. The supposition that miraculous powers might be wielded by heretics (though it might be supported by high authority) led to consequences too frightful to be entertained by people who were busied in building their dogmatic house on the sands of early Church history. If, as the Romanists maintained, an unbroken

series of genuine miracles adorned the records of their Church, throughout the whole of its existence, no Anglican could lightly venture to accuse them of doctrinal corruption. Hence, the Anglicans, who indulged in such accusations, were bound to prove the modern, the mediæval Roman, and the later Patristic, miracles false; and to shut off the wonder-working power from the Church at the exact point of time when Anglican doctrine ceased and Roman doctrine began. With a little adjustment—a squeeze here and a pull there—the Christianity of the first three or four centuries might be made to fit, or seem to fit, pretty well into the Anglican scheme. So the miracles, from Justin say to Jerome, might be recognised; while, in later times, the Church having become “corrupt”—that is to say, having pursued one and the same line of development further than was pleasing to Anglicans—its alleged miracles must needs be shams and impostures.

Under these circumstances, it may be imagined that the establishment of a scientific frontier between the earlier realm of supposed fact and the later of asserted delusion, had its difficulties; and torrents of theological special pleading about the subject flowed from clerical pens; until that learned and acute Anglican divine, Conyers Middleton, in his “Free Inquiry,” tore the sophistical web they had laboriously woven to pieces, and demonstrated that the miracles of the patristic age, early and late, must stand or fall together, inasmuch as the evidence for the later is just as good as the evidence for the earlier wonders. If the one set are certified by contemporaneous witnesses of high repute, so are the other; and, in point of probability, there is not a pin to choose between the two. That is the solid and irrefragable result of Middleton’s contribution to the subject. But the Free Inquirer’s freedom had its limits; and he draws a sharp line of demarcation between the patristic and the New Testament miracles—on the professed ground

that the accounts of the latter, being inspired, are out of the reach of criticism.

A century later, the question was taken up by another divine, Middleton's equal in learning and acuteness, and far his superior in subtlety and dialectic skill; who, though an Anglican, scorned the name of Protestant; and, while yet a Churchman, made it his business, to parade, with infinite skill, the utter hollowness of the arguments of those of his brother Churchmen who dreamed that they could be both Anglicans and Protestants. The argument of the "Essay on the Miracles recorded in the Ecclesiastical History of the Early Ages"¹ by the present [1889] Roman Cardinal, but then Anglican Doctor, John Henry Newman, is compendiously stated by himself in the following passage:—

If the miracles of Church history cannot be defended by the arguments of Leslie, Lyttelton, Paley, or Douglas, how many of the Scripture miracles satisfy their conditions? (P. cvii.)

And, although the answer is not given in so many words, little doubt is left on the mind of the reader, that in the mind of the writer, it is: None. In fact, this conclusion is one which cannot be resisted, if the argument in favour of the Scripture miracles is based upon that which laymen, whether lawyers, or men of science, or historians, or ordinary men of affairs, call evidence. But there is something really impressive in the magnificent contempt with which, at times, Dr. Newman sweeps aside alike those who offer and those who demand such evidence.

Some infidel authors advise us to accept no miracles which would not have a verdict in their favour in a court of justice; that is, they employ against Scripture a weapon which Protestants would confine to attacks upon the Church; as if

¹ I quote the first edition (1843). A second edition appeared in 1870. Tract 85 of the *Tracts for the Times* should be read with this *Essay*. If I were called upon to compile a Primer of "Infidelity," I think I should save myself trouble by making a selection from these works, and from the *Essay on Development* by the same author.

moral and religious questions required legal proof, and evidence were the test of truth¹ (p. cvii).

"As if evidence were the test of truth!"—although the truth in question is the occurrence, or the non-occurrence, of certain phenomena at a certain time and in a certain place. This sudden revelation of the great gulf fixed between the ecclesiastical and the scientific mind is enough to take away the breath of any one unfamiliar with the clerical organon. As if, one may retort, the assumption that miracles may, or have, served a moral or a religious end, in any way alters the fact that they profess to be historical events, things that actually happened; and, as such, must needs be exactly those subjects about which evidence is appropriate and legal proofs (which are such merely because they afford adequate evidence) may be justly demanded. The Gadarene miracle either happened, or it did not. Whether the Gadarene "question" is moral or religious, or not, has nothing to do with the fact that it is a purely historical question whether the demons said what they are declared to have said, and the devil-possessed pigs did, or did not, rush over the heights bounding the Lake of Gennesaret on a certain day of a certain year, after A.D. 26 and before A.D. 36: for vague and uncertain as New Testament chronology is, I suppose it may be assumed that the event in question, if it happened at all, took place during the procuratorship of Pilate. If that is not a matter about which evidence ought to be required, and not only legal, but strict scientific proof demanded by sane men who are asked to believe the story—what is? Is a reasonable being to be seriously asked to credit statements, which, to put the case gently, are not exactly probable, and on the acceptance or rejection of which his whole view of life may depend, without

¹ Yet, when it suits his purpose, as in the Introduction to the *Essay on Development*, Dr. Newman can demand strict evidence in religious questions as sharply as any "infidel author" and he can even profess to yield to its force (*Essay on Miracles*, 1870; note, p. 391).

...ing for as much "legal" proof as would send an alleged pickpocket to jail, or as would suffice to prove the validity of a disputed will?

"Infidel authors" (if, as I am assured, I may answer for them) will decline to waste time on mere darkenings of counsel of this sort; but to those Anglicans who accept his premises, Dr. Newman is a truly formidable antagonist. What, indeed, are they to reply when he puts the very pertinent question:—

Whether persons who not merely question, but prejudge the Ecclesiastical miracles on the ground of their want of resemblance, whatever that be, to those contained in Scripture—as if the Almighty could not do in the Christian Church what He had not already done at the time of its foundation, or under the Mosaic Covenant—whether such reasoners are not siding with the sceptic,

and

whether it is not a happy inconsistency by which they continue to believe the Scriptures while they reject the Church? (p. liii).

Again, I invite Anglican orthodoxy to consider this passage:—

The narrative of the combats of St. Antony with evil spirits, is a development rather than a contradiction of revelation, viz. of such texts as speak of Satan being cast out by prayer and fasting. To be shocked, then, at the miracles of Ecclesiastical history, or to ridicule them for their strangeness, is no part of a scriptural philosophy (pp. liii-liv).

Further on, Dr. Newman declares that it has been admitted

that a distinct line can be drawn in point of character and circumstance between the miracles of Scripture and of Church history; but this is by no means the case (p. lv). . . . specimens are not wanting in the history of the Church, of miracles as awful in their character and as momentous in their effects as those which are recorded in Scripture. The fire interrupting the rebuilding of the Jewish Temple, and the death of Arius, are instances, in Ecclesiastical history, of such solemn events. On the other hand, difficult instances in the Scripture history are such as these: the serpent in Eden, the Ark, Jacob's vision for the multiplication of his cattle, the speaking of Balaam's ass, the axe swimming

at Elijah's word, the miracle of the man born blind, various instances of prayers answered, and many others, which, as in that of Noah's blessing, are words which seem the result of private revelation, are expressly or virtually ascribed to a Divine suggestion (p. lvi).

Who is to gainsay our ecclesiastical authority here? "Infidel authors" might be accused of a wish to ridicule the Scripture miracles by putting them on a level with the remarkable story about the fire which stopped the rebuilding of the Temple, or that about the death of Arius—but Dr. Newman is above suspicion. The pity is that his list of what he delicately terms "difficult" instances is so short. Why omit the manufacture of Eve out of Adam's rib, on the strict historical accuracy of which the chief argument of the defenders of an iniquitous portion of our present marriage law depends? Why leave out the account of the "Bene Elohim" and their gallantries, on which a large part of the worst practices of the mediæval inquisitors into witchcraft was based? Why forget the angel who wrestled with Jacob, and, as the account suggests, somewhat over-stepped the bound of fair play, at the end of the struggle? Surely, we must agree with Dr. Newman that, if all these camels have gone down, it savours of affectation to strain at such gnats as the sudden ailment of Arius in the midst of his deadly, if prayerful, enemies; and the fiery explosion which stopped the Julian building operations. Though the words of the "Conclusion"

According to Dr. Newman, "This prayer [that of Bishop Alexander, who begged God to 'take Arius away'] is said to have been offered about 3 p.m. on the Saturday; that same evening Arius was in the great square of Constantinople, when he was suddenly seized with indisposition" (p. clxx). The "infidel" Gibbon seems to have dared to suggest that "an option between poison and miracle" is presented by this case; and, it must be admitted, that, if the Bishop had been within the reach of a modern police magistrate, things might have gone hardly with him. Modern "Infidels," possessed of a slight knowledge of chemistry, are not unlikely, with no less audacity, to suggest an "option between fire and miracle" in seeking for the cause of the fiery outburst at Jerusalem.

* Compare Tract 85, p. 110; "I am persuaded that were men but consistent who oppose the Church doctrines as being unscriptural, they would vindicate the Jews for rejecting the Gospel."

"...in 'Miracles,' may, perhaps, be quoted against me, I may express my satisfaction at finding myself in substantial accordance with a theologian above all suspicion of heterodoxy. With all my heart, I can declare my belief that there is just as good reason for believing in the miraculous slaying of the man who fell short of the Athanasian power of affirming contradictories, with respect to the nature of the God-head, as there is for believing in the stories of the serpent and the ark told in Genesis, the speaking of Balaam's ass in Numbers, or the floating of the axe, at Elisha's order, in the second book of Kings.

It is one of the peculiarities of a really sound argument that it is susceptible of the fullest development; and that it sometimes leads to conclusions unexpected by those who employ it. To my mind, it is impossible to refuse to follow Dr. Newman when he extends his reasoning, from the miracles of the patristic and mediæval ages backward in time, as far as miracles are recorded. But, if the rules of logic are valid, I feel compelled to extend the argument forwards to the alleged Roman miracles of the present day, which Dr. Newman might not have admitted, but which Cardinal Newman may hardly reject. Beyond question, there is as good, or perhaps better, evidence of the miracles worked by our Lady of Lourdes, as there is for the floating of Elisha's axe, or the speaking of Balaam's ass. But we must go still further; there is a modern system of thaumaturgy and demonology which is just as well certified as the ancient.¹ Veracious, excellent,

¹ A writer in a spiritualist journal takes me roundly to task for venturing to doubt the historical and literal truth of the Gadarene story. The following passage in his letter is worth quoting: "Now to the materialistic and scientific mind, to the uninitiated in spiritual verities, certainly this story of the Gadarene or Gergesene seems presents insurmountable difficulties; it seems grotesque and nonsensical. To the experienced, trained, and cultivated Spiritualist

sometimes learned and acute persons, even philosophers of no mean pretensions, testify to the "levitation" of bodies much heavier than Elisha's axe; to the existence of "spirits" who, to the mere tactile sense, have been indistinguishable from flesh and blood; and, occasionally, have wrestled with all the vigour of Jacob's opponent; yet, further, to the speech, in the language of raps, of spiritual beings, whose discourses, in point of coherence and value, are far inferior to that of Balaam's humble but sagacious steed. I have not the smallest doubt that, if these were persecuting times, there is many a worthy "spiritualist" who would cheerfully go to the stake in support of his pneumatological faith; and furnish evidence, after Paley's own heart, in proof of the truth of his doctrines. Not a few modern divines, doubtless struck by the impossibility of refusing the spiritualist evidence, if the ecclesiastical evidence is accepted, and deprived of any *a priori* objection by their implicit belief in Christian Demonology, show themselves ready to take poor Sludge seriously, and to believe that he is possessed by other devils than those of need, greed, and vainglory.

Under these circumstances, it was to be expected, though it is none the less interesting to note the fact, that the arguments of the latest school of "spiritualists" present a wonderful family likeness to those which adorn the subtle disquisitions of the advocate

this miracle is, as I am prepared to show, one of the most instructive, the most profoundly useful, and the most beneficent which Jesus ever wrought in the whole course of His pilgrimage of redemption on earth." Just so. And the first page of this same journal presents the following advertisement, among others of the same kidney:—

"TO WEALTHY SPIRITUALISTS.—A Lady Medium of tried power wishes to meet with an elderly gentleman who would be willing to give her a comfortable home and maintenance in Exchange for her Spiritualistic services, as her guides consider her health is too delicate for public sittings: London preferred.—Address 'Mary,' Office of Light."

Are we going back to the days of the Judges, when wealthy Micah set up his private ephod, teraphim, and Levite?

of ecclesiastical miracles of forty years ago. It is unfortunate for the "spiritualists" that, over and over again, celebrated and trusted media, who really, in some respects, call to mind the Montanist¹ and gnostic seers of the second century, are either proved in courts of law to be fraudulent impostors; or, in sheer weariness, as it would seem, of the honest dupes who swear by them, spontaneously confess their long-continued iniquities, as the Fox women did the other day in New York.² But, whenever a catastrophe of this kind takes place, the believers are no wise dismayed by it. They freely admit that not only the media, but the spirits whom they summon, are sadly apt to lose sight of the elementary principles of right and wrong; and they triumphantly ask: How does the occurrence of occasional impostures disprove the genuine manifestations (that is to say, all those which have not yet been proved to be impostures or delusions)? And, in this, they unconsciously plagiarise from the churchman, who just as freely admits that many ecclesiastical miracles may have been forged; and asks, with calm contempt, not only of legal proofs, but of common-sense probability, Why does it follow that none are to be supposed genuine? I must say, however, that the spiritualists, so far as I know, do not venture to outrage right reason so boldly as the ecclesiastics. They do not sneer at "evidence"; nor repudiate

¹ Consider Tertullian's "sister" ("hodie apud nos"), who conversed with angels, saw and heard mysteries, knew men's thoughts, and prescribed medicine for their bodies (*De Anima*, cap. 9). Tertullian tells us that this woman saw the soul as corporeal, and described its colour and shape. The "infidel" will probably be unable to refrain from insulting the memory of the ecstatic saint by the remark, that Tertullian's known views about the corporeality of the soul may have had something to do with the remarkable perceptive powers of the Montanist medium, in whose revelations of the spiritual world he took such profound interest.

² See the *New York World* for Sunday, 1st October, 1888; and the *Report of the Elybert Commission* Philadelphia, 1887.

the requirement of legal proofs. In fact, there can be no doubt that the spiritualists produce better evidence for their manifestations than can be shown either for the miraculous death of Arius, or for the Invention of the Cross.¹

From the "levitation" of the axe, at one end of a period of near three thousand years to the "levitation" of Sludge & Co. at the other end, there is a complete continuity of the miraculous, with every gradation, from the childish to the stupendous, from the gratification of a caprice to the illustration of sublime truth. There is no drawing a line in the series that might be set out of plausibly attested cases of spiritual intervention. If one is true, all may be true; if one is false, all may be false.

This is, to my mind, the inevitable result of that method of reasoning which is applied to the confutation of Protestantism, with so much success, by one of the acutest and subtlest disputants who have ever championed Ecclesiasticism—and one cannot put his claims to acuteness and subtlety higher.

... the Christianity of history is not Protestantism. If ever there were a safe truth it is this. . . . "To be deep in history is to cease to be a Protestant."²

I have not a shadow of doubt that these anti-Protestant epigrams are profoundly true. But I have as little that, in the same sense, the "Christianity of history is not" Romanism; and that to be deeper in history is to cease to be a Romanist. The reasons which compel my doubts about the compatibility of the Roman doctrine, or any other form

¹ Dr. Newman's observation that the miraculous multiplication of the pieces of the true cross (with which "the whole world is filled," according to Cyril of Jerusalem; and of which some say there are enough extant to build a man-of-war) is no more wonderful than that of the loaves and fishes, is one that I do not see my way to contradict. See *Essay on Miracles*, 2d ed. p. 163.

² *An Essay on the Development of Christian Doctrine*, by J. H. Newman, D.D., pp. 7 and 8. (1878.)

of Catholicism, with history, arise out of exactly the same line of argument as that adopted by Dr. Newman in the famous essay which I have just cited. If, with one hand, Dr. Newman has destroyed Protestantism, he has annihilated Romanism with the other; and the total result of his ambidextral efforts is to shake Christianity to its foundations. Nor was any one better aware that this must be the inevitable result of his arguments—if the world should refuse to accept Roman doctrines and Roman miracles—than the writer of Tract 85.

Dr. Newman made his choice and passed over to the Roman Church half a century ago. Some of those who were essentially in harmony with his views preceded, and many followed him. But many remained; and, as the quondam Puseyite and present Ritualistic party, they are continuing that work of sapping and mining the Protestantism of the Anglican Church which he and his friends so ably commenced. At the present time, they have no little claim to be considered victorious all along the line. I am old enough to recollect the small beginnings of the Tractarian party; and I am amazed when I consider the present position of their heirs. Their little leaven has leavened, if not the whole, yet a very large lump of the Anglican Church; which is now pretty much of a preparatory school for Papistry. So that it really behoves Englishmen (who, as I have been informed by high authority, are all legally members of the State Church, if they profess to belong to no other sect) to wake up to what that powerful organisation is about, and whither it is tending. On this point, the writings of Dr. Newman, while he still remained within the Anglican fold, are a vast store of the best and the most authoritative information. His doctrines on Ecclesiastical miracles and on Development are the corner-stones of the Tractarian fabric. He believed that his arguments led either Romeward, or to what ecclesiastics call "Infidelity," and I call Agnosticism.

I believe that he was quite right in this conviction; but while he chooses the one alternative, I choose the other; as he rejects Protestantism on the ground of its incompatibility with history, so, *a fortiori*, I conceive that Romanism ought to be rejected; and that an impartial consideration of the evidence must refuse the authority of Jesus to anything more than the Nazarenism of James and Peter and John. And let it not be supposed that this is a mere "infidel" perversion of the facts. No one has more openly and clearly admitted the possibility that they may be fairly interpreted in this way than Dr. Newman. If, he says, there are texts which seem to show that Jesus contemplated the evangelisation of the heathen:

... Did not the Apostles hear our Lord? and what was *their* impression from what they heard? Is it not certain that the Apostles did not gather this truth from His teaching? (Tract 85, p. 63.)

He said, "Preach the Gospel to every creature." These words *need* have only meant, "Bring all men to Christianity through Judaism." Make them Jews, that they may enjoy Christ's privileges, which are lodged in Judaism; teach them those rites and ceremonies, circumcision and the like, which hitherto have been dead ordinances, and now are living: and so the Apostles seem to have understood them (*ibid.* p. 65).

So far as Nazarenism differentiated itself from contemporary orthodox Judaism, it seems to have tended towards a revival of the ethical and religious spirit of the prophetic age, accompanied by the belief in Jesus as the Messiah, and by various accretions which had grown round Judaism subsequently to the exile. To these belong the doctrines of the Resurrection, of the Last Judgment, of Heaven and Hell; of the hierarchy of good angels; of Satan and the hierarchy of evil spirits. And there is very strong ground for believing that all these doctrines, at least in the shapes in which they were held by the post-exilic Jews, were derived from Persian and Babylonian¹ sources, and are essentially of heathen origin.

¹ Dr. Newman faces this question with his customary ability. "Now, I own, I am not at

...that I am positively sanctioned all the unstrainings of circumjacent agnosticism into Judaism; how far any one has a right to declare that the refusal to accept one or other of these doctrines, as ascertained verities, comes to the same thing as contradicting Jesus, appears to me not easy to say. But it is hardly less difficult to conceive that one could have distinctly negated any of them; and, more especially, that demonology which has been accepted by the Christian Churches, in every age and under all their mutual antagonisms. But I repeat my conviction that, whether Jesus sanctioned the demonology of his time and nation or not, it is doomed. The future of Christianity, as a dogmatic system and apart from the old Israelitish fancies which it has appropriated and developed, lies in the answer which mankind will eventually give to the question, whether they are prepared to believe such stories as the Gadarene and the pneumatological hypotheses which go with it, or not. My belief is they will decline to do anything of the sort, whenever and wherever their minds have been disciplined by science. And that discipline must, and will, at once follow and lead the footsteps of advancing civilisation.

The preceding pages were written before I became acquainted with the contents of the May number of the *Nineteenth Century*, wherein I discover many things which are decidedly not to my advantage. It would appear that "evasion" is my chief resource, "incapacity for strict argument" and "rotteness of ratiocination" my main mental characteristics, and that it is "barely credible" that a statement

so solicitous to deny that this doctrine of an separate Angel and his hosts was gained from Babylon: it might still be Divine nevertheless. God who made the prophet's ass speak, and thereby instructed the prophet, might instruct the Church by means of heathen Babylon" (*ibid* 85, p. 83). There seems to be no end to the apologetic burden that Balaam's ass can

which I profess to possess. All which I notice, merely to illustrate the truth, forced on me by long experience, that it is only from those who enjoy the blessing of a firm hold of the Christian faith that such manifestations of meekness, patience, and charity are to be expected.

I had imagined that no one who had read my preceding papers, could entertain a doubt as to my position in respect of the main issue, as it has been stated and restated by my opponent:

an Agnosticism which knows nothing of the relation of man to God must not only refuse belief to our Lord's most undoubted teaching, but must deny the reality of the spiritual convictions in which He lived.¹

That is said to be "the simple question which is at issue between us," and the three testimonies to that teaching and those convictions selected are the Sermon on the Mount, the Lord's Prayer, and the Story of the Passion.

My answer, reduced to its briefest form, has been: In the first place, the evidence is such that the exact nature of the teachings and the convictions of Jesus is extremely uncertain; so that what ecclesiastics are pleased to call a denial of them may be nothing of the kind. And, in the second place, if Jesus taught the demonological system involved in the Gadarene story—if a belief in that system formed a part of the spiritual convictions in which He lived and died—then I, for my part, unhesitatingly refuse belief in that teaching, and deny the reality of those spiritual convictions. And I go further and add, that, exactly in so far as it can be proved that Jesus sanctioned the essentially pagan demonological theories current among the Jews of his age, exactly in so far, for me, will his authority in any matter touching the spiritual world be weakened.

With respect to the first half of my answer, I have pointed out that the Sermon on the Mount, as given in the

¹ *Nineteenth Century*, May 1889, for example.

...the opinion of the "historic work" of materials from different sources, and I do not understand that this statement is challenged. The only other Gospel—the third—which contains something like it, makes, not only the discourse, but the circumstances under which it was delivered, very different. Now, it is something to say that there was something real at the bottom of the two discourses—which is quite possible; and another to affirm that we have any right to say what that something was, or to fix upon any particular phrase and declare it to be a genuine utterance. Those who pursue theology as a science, and bring to the study an adequate knowledge of the ways of ancient historians, will find no difficulty in providing illustrations of my meaning. I may supply one which has come within range of my own limited vision.

In Josephus's "History of the Wars of the Jews" (chap. xix.), that writer reports a speech which he says Herod made at the opening of a war with the Arabians. It is in the first person, and would naturally be supposed by the reader to be intended for a true version of what Herod said. In the "Antiquities," written some seventeen years later, the same writer gives another report, also in the first person, of Herod's speech on the same occasion. This second oration is twice as long as the first and, though the general tenor of the two speeches is pretty much the same, there is hardly any verbal identity, and a good deal of matter is introduced into the one, which is absent from the other. Josephus prides himself on his accuracy; people whose fathers might have heard Herod's oration were his contemporaries; and yet his historical sense is so curiously undeveloped that he can quite innocently perpetrate an obvious literary fabrication; for one of the two accounts must be incorrect. Now, if I am asked whether I believe Herod made some particular statement on this occasion; whether, for

example, he uttered the pious aphorism, "Where God is, there is both multitude and courage," which is given in the "Antiquities," but not in the "Wars," I am compelled to say I do not know. One of the two reports must be erroneous, possibly both are: at any rate, I cannot tell how much of either is true. And, if some fervent admirer of the Idumean should build up a theory of Herod's piety upon Josephus's evidence that he propounded the aphorism, is it a "mere evasion" to say, in reply, that the evidence that he did utter it is worthless?

It appears again that, adopting the tactics of Conachar when brought face to face with Hal o' the Wynd, I have been trying to get my simple-minded adversary to follow me on a wild-goose chase through the early history of Christianity, in the hope of escaping impending defeat on the main issue. But I may be permitted to point out that there is an alternative hypothesis which equally fits the facts; and that, after all, there may have been method in the madness of my supposed panic.

For suppose it to be established that Gentile Christianity was a totally different thing from the Nazarenism of Jesus and his immediate disciples; suppose it to be demonstrable that, as early as the sixth decade of our era at least, there were violent divergencies of opinion among the followers of Jesus; suppose it to be hardly doubtful that the Gospels and the Acts took their present shapes under the influence of those divergencies; suppose that their authors, and those through whose hands they passed, had notions of historical veracity not more eccentric than those which Josephus occasionally displays: surely the chances that the Gospels are altogether trustworthy records of the teachings of Jesus become very slender. And, since the whole of the case of the other side is based on the supposition that they are accurate records (especially of speeches, about which ancient historians are so curiously loose), I

really do venture to submit that this part of my argument bears very seriously on the main issue; and, as ratiocination, is sound to the core.

Again, when I passed by the topic of the speeches of Jesus on the Cross, it appears that I could have had no other motive than the dictates of my native easiness. An ecclesiastical dignitary may have respectable reasons for declining a fencing match "in sight of Gethsemane and Calvary"; but an ecclesiastical "Infidel"! Never. It is obviously impossible that, in the belief that "the greater includes the less," I, having declared the Gospel evidence in general, as to the sayings of Jesus, to be of questionable value, thought it needless to select for illustration of my views, those particular instances which were likely to be most offensive to persons of another way of thinking. But any supposition that may have been entertained that the old familiar tones of the ecclesiastical war-drum will tempt me to engage in such needless discussion had better be renounced. I shall do nothing of the kind. Let it suffice that I ask my readers to turn to the twenty-third chapter of Luke (revised version), verse thirty-four, and he will find in the margin

Some ancient authorities omit: And Jesus said, "Father, forgive them, for they know not what they do."

So that, even as late as the fourth century, there were ancient authorities, indeed some of the most ancient and weightiest, who either did not know of this utterance, so often quoted as characteristic of Jesus, or did not believe it had been uttered.

Many years ago, I received an anonymous letter, which abused me heartily for my want of moral courage in not speaking out. I thought that one of the oddest charges an anonymous letter-writer could bring. But I am not sure that the plentiful sowing of the pages of the article with which I am dealing with accusations of evasion, may not

seem odder to those who consider that the main strength of the answer, in which I have been favoured (in this review and elsewhere) is devoted, not to anything in the text of my first paper, but to a note which occurs at p. 84. In this I say:

Dr. Wace tells us: "It may be asked how far we can rely on the accounts we possess of our Lord's teaching on these subjects." And he seems to think the question appropriately answered by the assertion that it "ought to be regarded as settled by M. Renan's practical surrender of the adverse case."

I requested Dr. Wace to point out the passages of M. Renan's works in which, as he affirms, this "practical surrender" (not merely as to the age and authorship of the Gospels, but as observed, but as to their historical value) is made, and he has been so good as to do so. Now let us consider the parts of Dr. Wace's citation from Renan which are relevant to the issue:—

The author of this Gospel [Luke] is certainly the same as the author of the Acts of the Apostles. Now the author of the Acts seems to be a companion of St. Paul—a character which accords completely with St. Luke. I know that more than one objection may be opposed to this reasoning: but one thing, at all events, is beyond doubt, namely, that the author of the third Gospel and of the Acts is a man who belonged to the second apostolic generation; and this suffices for our purpose.

This is a curious "practical surrender of the adverse case." M. Renan thinks that there is no doubt that the author of the third Gospel is the author of the Acts—a conclusion in which I suppose critics generally agree. He goes on to remark that this person *seems* to be a companion of St. Paul, and adds that Luke was a companion of St. Paul. Then, somewhat needlessly, M. Renan points out that there is more than one objection to jumping, from such data as these, to the conclusion that "Luke" is the writer of the third Gospel. And, finally, M. Renan is content to reduce that which is "beyond doubt" to the fact that the author of the two books is a man of the second apostolic generation. Well, it seems to me that I could agree

And, all the while, M. Renan considers "beyond doubt" here, without surrendering anything either "practically" or theoretically.

Dr. Wace (*Nineteenth Century*, March, p. 363) states that he derives the above citation from the preface to the fifth edition of the "Vie de Jésus." My copy of "Les Évangiles," dated 1877, contains a list of Renan's "Œuvres Complètes," at the head of which I find "Vie de Jésus," 15^e édition. It is, therefore, a later work than the edition of the "Vie de Jésus" which Dr. Wace quotes. Now "Les Évangiles," as its name implies, treats fully of the questions respecting the date and authorship of the Gospels; and any one who desired, not merely to use M. Renan's expressions for controversial purposes, but to give a fair account of his views in their full significance, would, I think, refer to the later source.

If this course had been taken, Dr. Wace might have found some as decided expressions of opinion, in favour of Luke's authorship of the third Gospel, as he has discovered in "The Apostles." I mention this circumstance, because I desire to point out that, taking even the strongest of Renan's statements, I am still at a loss to see how it justifies that large sounding phrase, "practical surrender of the adverse case." For, on p. 438 of "Les Évangiles," Renan speaks of the way in which Luke's "excellent intentions" have led him to torture history in the Acts; he declares Luke to be the founder of that "eternal fiction which is called ecclesiastical history"; and, on the preceding page, he talks of the "myth" of the Ascension—with its "*mise en scène voulue*." At p. 435, I find "Luc, ou l'auteur quel qu'il soit du troisième Évangile"; at p. 280, the accounts of the Passion, the death and the resurrection of Jesus, are said to be "peu historiques"; at p. 283, "La valeur historique du troisième Évangile est sûrement moindre que celles des deux premiers." A Pyrrhic sort of victory for orthodoxy, this "surrender"!

And, all the while, the scientific student of theology knows that, the more reasons there may be to believe that Luke was the companion of Paul, the more doubtful becomes his credibility, if he really wrote the Acts. For, in that case, he could not fail to have been acquainted with Paul's account of the Jerusalem conference, and he must have consciously misrepresented it.

We may next turn to the essential part of Dr. Wace's citation (*Nineteenth Century*, p. 365) touching the first Gospel:—

St. Matthew evidently deserves peculiar confidence for the discourses. Here are the "oracles"—the very notes taken while the memory of the instruction of Jesus was living and definite.

M. Renan here expresses the very general opinion as to the existence of a collection of "logia," having a different origin from the text in which they are embedded, in Matthew. "Notes" are somewhat suggestive of a shorthand writer, but the suggestion is unintentional, for M. Renan assumes that these "notes" were taken, not at the time of the delivery of the "logia" but subsequently, while (as he assumes) the memory of them was living and definite; so that, in this very citation, M. Renan leaves open the question of the general historical value of the first Gospel; while it is obvious that the accuracy of "notes" taken, not at the time of delivery, but from memory, is a matter about which more than one opinion may be fairly held. Moreover, Renan expressly calls attention to the difficulty of distinguishing the authentic "logia" from later additions of the same kind ("Les Évangiles," p. 201). The fact is, there is no contradiction here to that opinion about the first Gospel which is expressed in "Les Évangiles" (p. 175).

The text of the so-called Matthew supposes the pre-existence of that of Mark, and does little more than complete it. He completes it in two fashions—first, by the insertion of those long discourses which gave their chief value to the Hebrew Gospels; then by adding traditions of a more modern formation, results of successive

Renan goes on to suggest that besides "Mark," "Pseudo-Matthew" and an Aramaic version of the Gospel, originally set forth in that dialect. Finally, as to the second Gospel (*Nineteenth Century*, p. 365):—

The [Mark] is full of minute observations, profound, beyond doubt, from an eye-witness. There is nothing to conflict with the supposition that this eye-witness . . . was the Apostle Peter himself, as Papias has it.

Let us consider this citation by the light of "Les Évangiles":—

This work, although composed after the death of Peter, was, in a sense, the work of Peter; it represents the way in which Peter was accustomed to relate the life of Jesus (p. 116).

M. Renan goes on to say that, as an historical document, the Gospel of Mark is a great superiority (p. 116); but Mark has a motive for omitting the discourses, and he attaches a "puerile importance" to miracles (p. 117). The Gospel of Mark is less a legend, than a biography written with credulity (p. 118). It would be rash to say that Mark has not been interpolated and retouched (p. 120).

If any one thinks that I have not been warranted in drawing a sharp distinction between "scientific theologians" and "councils for creeds"; or that my warning against the too ready acceptance of certain declarations as to the state of biblical criticism was needless; or that my anxiety as to the sense of the word "practical" was superfluous; let him compare the statement that M. Renan has made a "practical surrender of the adverse case" with the facts just set forth. For what is the adverse case? The question, as Dr. Wace puts it, is "It may be asked how far can we rely on the accounts we possess of our Lord's teaching on these subjects." It will be obvious that M. Renan's statements amount to an adverse answer—to, a "practical" denial that any great reliance can be placed on these accounts. He does not

the first Gospel; he does not know who is responsible for the collection of "logia," or how many of them are authentic; though he tells the second Gospel the most honest; he points out that it is written with credulity, and may have been interpolated and retouched; and as to the author, "quel qu'il soit," of the third Gospel, who is to "rely on the accounts" of a writer, who deserves the cavalier treatment which "Luke" meets with at M. Renan's hands?

I repeat what I have already more than once said, that the question of the age and the authorship of the Gospels has not, in my judgment, the importance which is so commonly assigned to it; for the simple reason that the reports, even of eye-witnesses, would not suffice to justify belief in a large and essential part of their contents; on the contrary, these reports would discredit the witnesses. The Gadarene miracle, for example, is so extremely improbable that the fact of its being reported by three, even independent, authorities could not justify belief in it, unless we had the clearest evidence as to their capacity as observers and as interpreters of their observations. But it is evident that the three authorities are not independent; that they have simply adopted a legend, of which there were two versions; and instead of their proving its truth, it suggests their superstitious credulity, so that if "Matthew," "Mark," and "Luke" are really responsible for the Gospels, it is not the better for the Gadarene story, but the worse for them.

A wonderful amount of controversial capital has been made out of my assertion in the note to which I have referred, as an *obiter dictum* of no consequence to my argument, that if Renan's work¹ were non-extant, the main results of biblical criticism, as set forth in the works of Strauss, Baur, Reuss, and

¹ I trust it may not be supposed that I undervalue M. Renan's labours, or intend to slightingly of them.

I thought I had explained it satisfactorily already, but it seems that my explanation has only satisfied still more of my native perversity, so I ask for one more chance.

In the course of the historical development in any branch of science, what is universally observed is this: that the men who make epochs, and are the real architects of the fabric of exact knowledge, are those who introduce fruitful ideas or methods. As a rule, the man who does this pushes his idea, or his method, too far; or, if he does not, his school is sure to do so; and those who follow have to reduce his work to its proper value, and assign it its place in the whole. Not unfrequently, they, in their turn, overdo the critical process, and, in trying to eliminate error, throw away truth.

Thus, as I said, Linnaeus, Buffon, Cuvier, Lamarck, really "set forth the results" of a developing science, although they often heartily contradicted one another. Notwithstanding this circumstance, modern classificatory method and nomenclature have largely grown out of the work of Linnaeus: the modern conception of biology, as a science, and of its relation to climatology, geography, and geology, are, as largely, rooted in the results of the labours of Buffon; comparative anatomy and paleontology owe a vast debt to Cuvier's results; while invertebrate zoology and the revival of the idea of evolution are intimately dependent on the results of the work of Lamarck. In other words, the main results of biology up to the early years of this century are to be found in, or spring out of, the works of these men.

So, if I mistake not, Strauss, if he did not originate the idea of taking the mythopoetic faculty into account in the development of the Gospel narratives, and though he may have exaggerated the importance of that faculty, obliged scientific theology hereafter, to take that element into serious consideration; so Baur, in pointing prominence to the cardinal fact

of the divergence of the Nazarene and Pauline tendencies in the primitive Church; so Reuss, in setting a marvellous example of the cool and dispassionate application of the principles of scientific criticism over the whole field of Scripture; so Volkmar, in his clear and forcible statement of the Nazarene limitations of Jesus, contributed results of permanent value in scientific theology. I took these names as they occurred to me. Undoubtedly, I might have advantageously added to them; perhaps, I might have made a better selection. But it really is absurd to try to make out that I did not know that these writers widely disagree; and I believe that no scientific theologian will deny that, in principle, what I have said is perfectly correct. Ecclesiastical advocates, of course, cannot be expected to take this view of the matter. To them, these mere seekers after truth, in so far as their results are unfavourable to the creed the clerics have to support, are more or less "infidels," or "favourers of "infidelity"; and the only thing they care to see, or probably can see, is the fact that, in a great many matters, the truth-seekers differ from one another, and therefore can easily be exhibited to the public, as if they did nothing else; as if any one who referred to their having each and all, contributed his share to the results of theological science, was merely showing his ignorance; and as if a charge of inconsistency could be based on the fact that he himself often disagrees with what they say. I have never lent a shadow of foundation to the assumption that I am a follower of either Strauss, or Baur, or Reuss, or Volkmar, or Renan; my debt to these eminent men—so far my superiors in theological knowledge—is, indeed, great; yet it is not for their opinions, but for those I have been able to form for myself, by their help.

In *Agnosticism: a Rejoinder*, I have referred to the difficulties under which those professors of the science of theology, whose tenure of their posts depends on the results of their investi-

persons, must labour, and, in a note, I add—

Imagine that all our chairs of Astronomy had been founded in the fourteenth century, and that their incumbents were bound to sign Ptolemaic articles. In that case, with every respect for the efforts of persons thus hampered to attain and expound the truth, I think men of common sense would go elsewhere to learn astronomy.

I did not write this paragraph without a knowledge that its sense would be open to the kind of perversion which it has suffered; but, if that was clear, the necessity for the statement was still clearer. It is my deliberate opinion: I reiterate it; and I say that, in my judgment, it is extremely inexpedient that any subject which calls itself a science should be entrusted to teachers who are debarred from freely following out scientific methods to their legitimate conclusions, whatever those conclusions may be. If I may borrow a phrase paraded at the Church Congress, I think it "ought to be unpleasant" for any man of science to find himself in the position of such a teacher.

Human nature is not altered by seating it in a professorial chair, even of theology. I have very little doubt that if, in the year 1859, the tenure of my office had depended upon my adherence to the doctrines of Cuvier, the objections to them set forth in the "Origin of Species" would have had a halo of gravity about them that, being free to teach what I pleased, I failed to discover. And, in making that statement, it does not appear to me that I am confessing that I should have been debarred by "selfish interests" from making candid inquiry, or that I should have

been biased by "sordid motives." I hope that even such a fragment of moral sense as may remain in an ecclesiastical "infidel" might have got me through the difficulty; but it would be unworthy to deny, or disguise, the fact that a very serious difficulty must have been created for me by the nature of my tenure. And let it be observed that the temptation, in my case, would have been far slighter than in that of a professor of theology; whatever biological doctrine I had repudiated, nobody I cared for would have thought the worse of me for so doing. No scientific journals would have howled me down, as the religious newspapers howled down my too honest friend, the late Bishop of Natal; nor would my colleagues of the Royal Society have turned their backs upon me, as his episcopal colleagues boycotted him.

I say these facts are obvious, and that it is wholesome and needful that they should be stated. It is in the interests of theology, if it be a science, and it is in the interests of those teachers of theology who desire to be something better than counsel for creeds, that it should be taken to heart. The seeker after theological truth and that only, will no more suppose that I have insulted him, than the prisoner who works in fetters will try to pick a quarrel with me, if I suggest that he would get on better if the fetters were knocked off; unless indeed, as it is said does happen in the course of long captivities, that the victim at length ceases to feel the weight of his chains, or even takes to hugging them, as if they were honourable ornaments.

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ETHICS OF THE GREAT RELIGIONS

BY

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ETHICS AND RELIGION.

AMONG those who take little or no trouble to analyse their beliefs there is still to be found a vague but widespread idea that morality is the offspring of religion, and that, if the established faith of a country is destroyed, a general dissolution of ethical obligations is certain to follow. A few considerations may be brought forward to show that this idea of the origin of morality is a mistaken one and the apprehension as to its future groundless. The common notion that the Bible is the source of our moral conceptions is not merely at variance with the facts, but is discredited by the Bible itself, which shows clearly that, long before the actual records were written, such conceptions were recognised and acted upon by the persons whose history is related. Indeed, a very early moral perception is implied by the legendary story of Eden, the significance of which lies in the fact that man had by disobedience to a divine command attained a knowledge of good and evil, which apparently it was intended he should never gain. In this incident the theological mind sees a "Fall," while the reasoning mind sees a rise—the first stage in the growth of a normal and necessary experience. The fallacious explanation hides a germ of truth; but it is a strange perversity that insists on such a palpable myth being accepted as veritable history.

Scientific investigation has now placed it beyond doubt that man has lived upon this earth for a time inconceivably longer than the 6,000 years deduced from the perplexing chronology of the Bible. The evidence need not be given here; it is available to all in the admirable summary contained in the late Mr. Samuel Laing's *Human Origins*. Let it suffice to say that the strength of the evidence lies in its cumulative character. From geology and astronomy we learn the enormous antiquity of the earth. Palæontology and archæology reveal to us the existence of primitive races who have passed away without leaving even a name behind. History, fragmentary though its records are, tells us of populous communities which inhabited the valley of the Nile and the plains of Mesopotamia from 7,000 to 10,000 years ago. Common sense delivers a similar verdict. If man had been created only 4,000 years B.C., it is utterly impossible that the great nations of Egypt and Assyria, to say nothing of the teeming populations of Central Asia, Hindustan, and China, could have developed into full social activity at

such early dates as history proves beyond question to have been the case.

Now, as it is certain that long before the date of the Flood, long before even the supposed Creation, large and comparatively civilised communities actually existed, it follows with equal certainty that in a still remoter antiquity those communities must have evolved laws more or less ethical in character for the regulation of their co-operative life. They could not otherwise have grown into nations. We know, from the evidence of the flint implements, that primitive men lived at first in small groups, which, for mutual protection, and following the ties of kinship, arranged themselves into clans; these in time became communities, and ultimately developed into great nations. This process occupied immense periods of time. In its earlier stages progress towards civilisation is slow to a degree almost inconceivable to us. Without the appliances, the inventions, and even the most familiar ideas of civilised life, existence drags on from day to day in one stagnant, uneventful round, the tedium of which, relieved only by the excitement of warfare and the chase, is unperceived by those who have never been accustomed to anything else. But coincident with the formation of the clan the need of laws governing the relations of the members to one another would make itself felt. In the case of a large community, whether pastoral or civic, a definite body of legislation would be too urgent a necessity to be disregarded. As internal dissension would seriously weaken the defensive capacity of the community as a body, disputes between its members would need to be adjusted by an impartial tribunal, and a system of justice would become organised. Murder, as diminishing the number and available strength of the social unit, would require stern suppression. Theft, slander, personal violence, would be felt as infractions of the right of each member to enjoy the advantages of association. From such offences each was liable to suffer, and all were therefore equally concerned to prevent them. If each member gave part of his time, strength, and intelligence to benefit the corporate body, it was natural to expect in return its aid in the protection of property, and some security for personal liberty. The advantages being common to all, each one would have the same interest in maintaining social order, and the popular concurrence would be assured in any legislative system, however rude, which had for its object the benefit of the whole community. The solicitude for the rights of property shown by many ancient codes, of which that of Hammurabi may be cited as an example, confirms a presumption which modern research has rendered imperative. And the social requirement would be stimulated by the growth of the natural disposition of human beings to unite their activities, as well as by the development of those sympathetic feelings which, as Darwin pointed out, form an essential part of the social instinct. In this way arose the idea of law, the idea of justice, the idea of moral

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duty, as the primary needs of a community if it was to hold together at all.

With this conception religion would at first have nothing to do. Man's feebly-developed reasoning powers led him to attribute to the forces of nature, and even to inanimate objects, feelings and passions similar to those which he experienced himself. Motion meant life. Life meant personality. No such idea as that of a boundary between the natural and the supernatural existed or could exist. They were not two conceptions, but one conception; and in this confusion, this ignorance, this credulity, we must look for the origin of all religious ideas. A crude fetish worship led by degrees to the veneration of the spirits of ancestors, of the heads of families, of warriors, of chieftains, of kings, and so, after thousands of years of dim surmise and painful striving, to the notion of a supreme spirit who had created the universe and man. In this slow process the religious impulse was marked by ever-varying degrees of superstition. For ages religion meant simply sacrifice, propitiation, ceremonial. Spiritual ideas and ethical influences came long afterwards.

It may be difficult to say positively which idea, that of morality or that of religion, came first in order of time; but it seems tolerably clear that for ages the two conceptions developed independently. All ancient records appear to indicate the absence of any close relation between them. So marked is the severance that in many cases the more religious the people the more conspicuous was their lack of morals. The Bible itself is instructive on this subject. Among the Jewish patriarchs, even where their characters were superior, we do not perceive that a fervent piety was any great bar to lying, cheating, and murder. In David we find a pronounced example of this severance of morals from religion. In spite of a religious faith so exalted and sincere that he was called a man after God's own heart, his natural ferocity was so great that in extreme old age he enjoined with his dying breath a savage vengeance upon his enemies. The conception of God in the Old Testament is sadly marred by this dissociation of religion from pure ethical ideas. At one moment tender, merciful, and gracious, in the next breath he is described as delighting in bloodshed, inflicting terrific punishments upon his enemies, and actuated by many of the passions which civilised humanity has learnt to consider debasing and shameful. The prejudicial effect upon morals of such imperfect conceptions of deity can hardly be exaggerated. The worshipper is prone to imitate the God he reveres, and Plato long ago warned the world against the mischief of allowing children to be taught that what is wrong for men is right for God. It can hardly be said that the Bible has not fostered the error of an unworthy anthropomorphism. And the error has not been confined to an insignificant people, but, by means of a strange and incomprehensible theory of divine inspiration, has permeated the civilised world, with

results which are a standing testimony to the disastrous effects of religion divorced from morality. Religion has formulated itself in terms of theology. Theology inevitably tends to exclusiveness and bigotry, and, in the result, to persecution for matters of opinion.

It is, in fact, clear that only as religion is purified and uplifted by ethical impulses does it become a civilising force. To this process the aid of the reasoning faculties is essential. In reason must lie the perception that worship should be something more than a blind aspiration towards the unseen; that it should be a power promoting social well-being as well as individual happiness. Reason must by long experience discover what beliefs are best fitted to attain this end, and what best accord with man's ever-growing perception of the right and the true. It took many ages before these two divisions of life could be made to work in harmony. Nor is the process yet complete, for theological and ethical reconstructions are still in progress. We cannot doubt, however, that the priestly caste—sometimes with the purest, sometimes with the most interested, motives—must thousands of years ago have perceived that religion could be made a powerful aid to morals, and numberless efforts in the direction of amalgamating them were made. So considerable a success was achieved that even in our own time large numbers of people still believe the two spheres to be practically identical, and that, if the one suffers under the rude breath of criticism, the other must suffer with it. Many thinkers, however, now hold that such a fear is baseless, and that even if it were well-founded it would afford no reason why we should be silent concerning that which we see to be false. They find that organised religion has been in the past productive of a degree of evil which its supporters are either *unaware* of or loth to admit. Rationalists are suspicious of such religion. They cannot admit that age has entirely changed its nature. It is not that they object to personal piety and humble trust in a higher power. But they find that religion unenlightened by reason invariably merges in superstition, and often leads to the commission of acts of barbarous cruelty in the supposed interests of its deity; that the intellectual forms in which its beliefs are stated have a tendency to narrow the understanding, to freeze the warmth of sympathy, and, being assumed to be final, to impede progress to larger and truer conceptions. If the independent thinker is right in this contention—and history gives the amplest testimony to its truth—he is justified in maintaining that all religious beliefs must be held subject to the verification of reason, and that the link between religion and morals, not being essential or indissoluble, may be broken if adequate ground can be shown. Religion and morals came into existence independently; they have to a large extent developed independently; and their union therefore cannot be deemed of eternal duration. What man has joined man can put asunder. The one assumes that morality originates in the will of God; the other finds

that it springs from the experience of man. "Theology supposes that all conduct in accordance with the desire and command of a man-like God, *whatever may be its natural effect*, is good; and that all conduct not in such accordance, *whatever may be its natural effect*, is bad" (Wilson's *New Light on Old Problems*, p. 55). Which is the truer basis of conduct, conformity to an unknown and contradictory will or the recognition of known effects upon human life? It is an error to teach that morality springs from any revelation. "It is of the very essence of the moral sense that it is a common perception by men of what is good for man.....When men respect human life for the sake of Man, tranquillity, order, and progress go hand in hand; but those who only respected human life because God had forbidden murder have set their mark upon Europe in fifteen centuries of blood and fire" (Professor Clifford, *Ethics and Religion*). It is this inveterate spirit of theology which has confused positive moral duties with erroneous dogmas and ceremonial precepts, to the serious detriment of both moral and intellectual progress.

Religion and morals occupy different departments of life. The objections which apply to the one do not apply to the other. The philosophical batteries which are shattering dogmas and creeds into fragments have no force against those moral concepts which a long course of experience has proved to be not merely beneficial, but indispensable to human welfare. The foundations of religion on its intellectual side are speculative, changing, unverifiable; those of morality are established, practical, and permanent. Is there any reason to suppose that, if Christendom finally gives up the doctrine of the Atonement, men will cease to be honest or women virtuous? The vague talk about the dissolution of dogma involving the break-up of morals assumes that they cannot exist apart. Has Buddhism been so great a failure? Even if the world at large were to throw off moral restraints to-morrow, has not the Christian Church faith enough in its ethical principles to continue to believe and preach them? And would not their practical effect be as great, or even greater, without the burden of doubtful doctrine? As for the masses, what value has religious restraint ever had for them? Why should it be supposed that the normal interests of humanity are not sufficient to keep men and women at least as united in the practice of justice and truth in the future as they have ever been under the rule of the Church? Is it the authority of religion or a perception of the ultimate utility of the natural virtues that constrains them so to act at present? Do we not feel impelled to do our duty, find a pleasure in acts of kindness, feel the impulse to honesty and truthfulness, though we no longer believe in hell-fire? It is wide of the mark to assume that religion is the only safeguard of morality. Look at the safeguards which will remain even if the whole dogmatic framework of religion were to collapse as suddenly as

the Philistines' temple in the grasp of Samson. We have the law of the land as a terror to evil-doers. We have the interest of the community, which knows well enough that honesty is the best policy, a statement equivalent, at its lowest, to saying that rational grounds exist for moral action. We have the simple faith in virtue which still animates the majority, and leads them to practise it without hope of reward. We have the Church organisations themselves, which will presumably continue to do their duty. Lastly, we have the large numbers of persons outside the Churches, who, under the name of Ethical Societies and similar bodies, are striving earnestly and patiently for individual and social improvement. We may conclude, therefore, that as the intellectual reconstruction which theology is to-day undergoing is likely to be for long a continuous process, and as the vital connection of particular doctrines with daily life has never been proved, the apprehension of injury to conduct from the disintegration of dogma is devoid of reasonable foundation. All intellectual statements of religious truth are temporary. What is permanent is not its form, but its spirit. When this spirit allies itself with the moral ideal, both are purified and strengthened. In propounding an absurd theology religion has done ill, but in the union of pious aspiration with practical ethics she has builded more wisely than she knew. The ethical element which theology has assimilated is really that which gives to religion its immense hold on the human heart. Dogmas decay and pass into oblivion like mists before the rising sun ; but the sense of righteousness remains to appeal for ever to the sympathies of struggling men and women. In their doctrinal aspects religions differ widely ; in their practical claims they unite in requiring obedience to the elementary principles of right. These principles exist independently of any religion, while making themselves felt in all. It is the object of the present little work to exhibit in their practical aspect the leading ethical features of the most famous religions which have influenced, and continue to influence, mankind, and to show how closely they approach one another in that which is most essential to human welfare.

ETHICS OF THE GREAT RELIGIONS

JUDAISM AND CHRISTIANITY

I.—Judaism.

THE collection of books known as the Bible embraces two distinct systems of religion, each having a theistic basis: the earlier, Judaism, of a ceremonial character, regulating conduct rather than influencing motive; the other, Christianity, broader in its claims, simpler in its ritual, and guiding conduct less by formal observances than by the power of impulses from within.

Our purpose in this chapter will be to present a very brief outline of the leading ethical characteristics of both religions, not so much from the critical as from the sympathetic point of view, desiring rather to dwell on those conceptions which have a permanent truth and beauty than to criticise those which are transient and imperfect. Into the vexed questions of the date and authorship of the various books constituting the Bible we shall not enter, beyond observing that we regard as sufficiently established those conclusions of modern scholarship which imply that the early purity and vigour of the Hebrew faith could not have been contemporaneous with the institution of the Levitical laws, which most probably originated after the captivity of the Jews in Babylon. It is improbable that the prophets should have been so strangely silent about the numerous obligations of the Mosaic ritual if they were aware of its existence as a divinely-revealed code. Their occasional scornful references to the system of sacrifice doubtless imply that such a system was then either in existence

or in course of development, but only as a form of religion with which they could not reconcile their own higher conceptions.

Those who regard the Bible as a revelation from God to man imply that a true morality cannot exist apart from the Bible, and did not originate prior to the assumed revelation which enabled Moses to write the Pentateuch. As a matter of fact, our knowledge of the history of ancient Egypt and Assyria proves beyond doubt that, in the main, all existing moral ideas were in force and operation long before a line of the Bible was written. Slight reflection is necessary to show that men could not have dwelt on this earth, as they certainly have done, for many thousands of years before the dawn of history without developing a workable code of morals; and when we consider that great organised communities, well on the way to civilisation, existed long before the assumed creation of man as recorded in the Bible, the conviction is strengthened that all the essential elements of morality must, by the sheer force of social requirements, have been developed ere Sargon, like the later Moses, was rescued from the river, or Menes trod the banks of the Nile. A glance at the Bible confirms this. We find moral excellence attributed to the earlier patriarchs, Enoch, Noah, and Melchisedek, though we can attach no very clear meaning to the phrase, "walked with God"; and the possibility that these personages belong rather to myth than to history must be recognised. Abraham, Isaac, and Joseph

were actuated by as high a sense of right as were those of their descendants who were supposed to have had the advantage of a written revelation to guide them. It is true that the patriarchs, Abraham in particular, are stated to have had direct relations with Deity; but it is significant that the "covenants" referred to were not of an ethical character. There is not a word to imply that moral ideas were then first made known, not a word to explain the nature of moral obligation, or setting forth any original or superior conceptions. The prior existence of such ideas is throughout assumed. Though he was commended for practising "justice and judgment," Abraham's righteousness appears to have consisted mainly in implicit obedience to orders, an obedience the less remarkable if the communications were at the time clearly recognised as divine. The blessings referred to carried with them in every instance the promise of superabundant reward in material prosperity. One might have supposed that the object of these communications would have been the awakening and strengthening of the spirit of righteousness and imparting valuable knowledge of social duties. But we constantly find the promise to be that the descendants of Abraham are to become a great nation, "as the sand on the seashore for multitude." Nor should we omit to notice that, while Abraham is commended for keeping the "statutes and laws" of God, there is no record of ethical laws or statutes having been announced.

It seems necessary to draw a distinction between the morality which is expressly inculcated in the Old Testament and the morality which it incidentally recognises. To the former belong the Ten Commandments, the Levitical and other laws, and the teachings of the Psalms and Prophets. To the latter belongs the conduct ascribed to God and the personages of the Old Testament, comprising, it must be confessed, many actions of an immoral or doubtful character, recorded for the

most part without the slightest word of condemnation or disapproval. We propose now to give a rapid glance at the moral principles which may be considered as definitely enjoined or sanctioned by the Hebrew Scriptures.

On the whole, the Ten Commandments may be considered as a valuable *résumé* of the moral law, and to be of the character which we should expect to be reached by a people in the stage of development which the Hebrews had attained in the time of Moses. Whether Moses really existed, whether the Commandments were divinely given through him, whether they originated in the fifteenth century B.C. or a thousand years later, are questions which cannot here be discussed. The code is not a perfect summary of moral obligation, nor are its negative injunctions calculated to foster the highest type of character. But in its mingling of a stern and lofty Theism with the requirements necessary to social well-being it must have been a great advance on any previously existing code. Its only positive commands are two: the observance of the Sabbath, and respect for parents; the former a familiar custom of the ancient Oriental nations, the latter an elementary obligation, some knowledge of which is common to almost all intelligent races. The prohibition of idolatry, and of the worship of more than one deity, on the ground that "the Lord is a jealous God," are commands which are more easily attributed to a religious man jealous for the honour of his deity than to the deity himself; while the remaining provisions embody those dictates of primary ethics which the requirements of all social life render obviously necessary. The concluding injunction, directed against the covetous spirit which is the source of dishonesty, though but an amplification of the eighth commandment, indicates a higher tone, as dealing with motives rather than with actions.

Any detailed analysis of the enactments contained in the 21st, 22nd, and 23rd

chapters of Exodus is, of course, impossible in a brief sketch, but a few of their special features may be mentioned. It is not to be expected that an even and rational standard of justice as conceived by ourselves should be found in the code of any semi-barbaric tribe; but, when such a code is assumed to be of divine origin, we have every right to expect a greater moral purity and uniformity than these chapters reveal. In many respects the laws are self-contradictory, and, if we are at times surprised at their humane spirit, we are as often shocked by their barbarous severity. The laws regulating slavery allow the servant to depart at the end of six years a free man. But if from a sentiment of personal affection a slave was willing to remain with his master, the latter was ordered to pierce the slave's ear in the presence of the "Elohim," or judges, in token that the servitude should last for ever. A surer means of discouraging affectionate service and the natural aspiration for liberty could hardly have been hit upon. If the slave married during his service, he was not allowed to take his wife and children with him if he chose freedom—an excellent expedient for perpetuating slavery. The fact was that no idea whatever of moral imperfection attached to the institution of slavery, as such. Ages of experience were needed for the growth of such a conception.

The penalty of death for cursing or reviling a parent is excessive, particularly as nothing is said as to the character of the cursing or of a possible provocation for it. It is natural that the distinction between murder and manslaughter should be imperfectly perceived by communities in a low stage of development; but some surprise is equally natural that, in laws alleged to emanate from an all-knowing God, the distinction is not more clearly stated. If one man strikes another (whether by accident or design is not mentioned in the twelfth verse of chapter xxi.) with a fatal result, the slayer is to be put to death. But, on the other hand, if God delivers the

victim into his hand, the slayer may flee to an appointed place for refuge. The difficulty of proving the circumstances under which the one man is delivered into the hands of the other is not apparently foreseen. Again, in the event of a woman suffering a miscarriage caused by men quarrelling, if no mischief follow (is miscarriage no mischief?), the punishment is to be as the woman's husband determines. But if mischief follow, death is to be the punishment of the offender—whether of one or both of the combatants is not made clear. None but a very crude notion of justice would make one of the disputants the judge of the other's criminality.

A strangely cruel law enacts that, if a slave, male or female, is beaten to death by the master, the latter is to be punished—in what way is not stated. But if the poor wretch linger in agony for a day or two, the master is not to be punished, because the slave is his money. The general principle of the Jewish law was that of an elementary justice—eye for eye, tooth for tooth, and life for life; but this principle was not consistently carried into practice. If a man stole an ox or sheep and sold it, he had to restore five-fold; but if he had not time to dispose of it, he had only to restore double. It is not easy to see where the difference in the moral character of the offence lies. The prohibition of injury to the widow or fatherless is wise and commendable; but the penalty of death for disobedience is unduly severe. The threat of utter destruction to anyone who sacrifices to alien gods indicates a frame of mind which identifies righteousness rather with ceremonial observances than with practical morals. It is for this offence that the utmost ferocity of punishment is reserved—even the slaughter of the innocent beasts of the offenders being ordained—an extreme, however, which must have had its good effects in clearing the way for higher conceptions of religion. A jealousy so merciless as to expressly forbid a parent to feel pity for the son whom he is ordered to slay must be

deemed rather a reversion to barbarism than a truly ethical sentiment. The command, "Thou shalt not suffer a witch to live," has been productive of an appalling amount of misery and physical suffering, and has done infinite mischief by its support of an unworthy superstition. On the other hand, the injunctions to take care of an enemy's property, not to exact usury from the poor or to oppress the stranger, and similar enactments, have a marked tendency to promote the social welfare, though such legislation is, of course, not peculiar to the Hebrew system. Other customs of the Hebrews, such as the trial for jealousy, the casting of lots, etc., are so closely analogous to the sorceries of savage "medicine men" that they cannot be pronounced consistent with any enlightened conception of morality, and cannot therefore be safely attributed to a divine source. It is little wonder that the custom of ordeals survived so late in mediæval times when they were sanctioned by what was regarded as the infallible word of God. So numerous are the instances in the Old Testament in which divine vengeance or great calamities were averted by prompt sacrifice of the supposed offenders that the least careful reader must perceive the immense influence of superstition among the Hebrews, and must experience a doubt, apart from all critical research, whether the descendants of Abraham were in any sense under the peculiar protection and superintending care of the Almighty, though the strength of their conviction on the subject cannot be questioned.

Most of the Levitical law consists of ceremonial observances, which have but an indirect moral significance. The very extensive slaughter of animals required by the Jewish sacrificial system could only be practised by a race in a low stage of civilisation. With truer spiritual discernment, the prophets declared that the blood of bulls and goats could by no possibility remove sin. The system was, in fact, a convenient form of easing man's

conscience and relaxing his moral responsibility: sins readily atoned for are readily committed. As having sprung, however, from still more barbarous conceptions, the Jewish sacrifices mark a forward rather than a backward movement. The requirement, for instance, that the first-born son should be devoted to the Lord is evidently a survival from the primitive practice of offering the life of the dearest earthly possession to appease the vengeful gods, and the great advance in humanity demands recognition. The various laws in Leviticus xviii., xix., and xx., with the exception of occasional monstrous excesses of severity, are wise and beneficial, and imply a distinct striving after moral purity. In Deuteronomy we find obligation frequently lifted to a higher level. Amid the reek of the slaughter-house, the smoke of the burnt-offerings, and the "hot anger of the Lord," we find the elements of a purer faith. "And now, Israel, what doth the Lord thy God require of thee but to fear the Lord thy God, to walk in all his ways, and to love him, and to serve the Lord thy God with all thy heart and with all thy soul" (Deut. x. 12); and the injunction, "Love ye therefore the stranger, for ye were strangers in the land of Egypt" (verse 19), lifts the mind above those narrow prejudices of the clan which in ancient times were so powerful and so common. In Exodus xxxiv. 6 we meet with a conception of God which it is difficult to reconcile with other representations of the divine nature, or with many of the actions attributed to him: "The Lord God, merciful and gracious, long suffering, and abundant in goodness and truth." Such passages are scattered about the earlier books of the Bible, but their logical bearing does not seem to have been perceived. That this merciful and long-suffering God should purposely visit the iniquity of the fathers upon the children, and upon the children's children unto the third and fourth generation, was not considered an anomaly, owing to that severance between

religious observance and moral conduct which it is one of the main objects of true religion to abolish. That the Hebrews strove to the best of their power to make their religion influence their daily life seems undoubted. Their ideal tended distinctly towards practical righteousness, but they had not the experience which would always enable them to know what righteousness involved.

The terrible cruelties in war, the excessive penalty for filial disobedience, the primitive methods for the investigation of crime and for the trial of chastity which we find sanctioned in the book of Deuteronomy, are relieved by such admirably inconsistent provisions as these :—

"Thou shalt not oppress an hired servant that is poor and needy, whether he be of thy brethren, or of thy strangers, that are in thy land within thy gates" (xxiv. 14).

"The fathers shall not be put to death for the children, neither shall the children be put to death for the fathers: every man shall be put to death for his own sin" (v. 19).

Elementary as this conception of justice may seem to us, it was doubtless needed among the ancient Jews. But it seems a pity that the family of the unfortunate Achan did not get the benefit of it. Hebrew righteousness was, in fact, dominated throughout and frequently fettered by the conception of a limited, partial, and jealous Deity from whom it was supposed to have originated.

It is not until we come to the Psalms and Prophets that we meet with a really internal heart-felt ethical sentiment, as distinct from the external regulation of conduct by law; though, as already implied, the germs of such a sentiment are met with in much earlier periods. It may be fairly presumed that some of the Psalms are of older date than the Levitical law and the book of Deuteronomy, while considerably later than the ancient traditions embodied in Genesis

and Exodus. Before such a degree of religious exaltation was attainable there must have been a long period of religious faith, often very imperfect, but with a tendency to enlightenment combined with fervour. On the other hand, after the outburst of spiritual feeling which we find in the Psalms and Prophets, a reaction was inevitable; the highest level could not be maintained; men of smaller minds and colder hearts would carry on the work of the priesthood, and forms and ceremonies would come to take the place of free and unfettered emotion. The religious life of communities ebbs and flows like the tides of the ocean.

The Psalms are poetic, not practical; devotion and not duty is their theme. The 15th Psalm is one of the first to trench upon the actual :—

"Lord, who shall abide in thy tabernacle? Who shall dwell in thy holy hill?

"He that walketh uprightly, and worketh righteousness, and speaketh the truth in his heart.

"He that backbiteth not with his tongue, nor doeth evil to his neighbour, nor taketh up a reproach against his neighbour. In whose eyes a vile person is contemned; but he honoureth them that fear the Lord. He that sweareth to his own hurt, and changeth not.

"He that putteth not out his money to usury, nor taketh reward against the innocent."

Psalm xxxvii. enjoins control of the temper: "Cease from anger, and forsake wrath: fret not thyself in any wise to do evil." We find, however, as in so many other passages of the Bible, the suggestion of temporal rewards for virtuous conduct: "The meek shall inherit the earth" (v. 11); "Depart from evil and do good, and dwell for evermore" (v. 27).

Among the finest expressions of a religious emotion which springs from the heart and seeks to purify conduct at its source are the oft-quoted verses of Psalm li.: "Create in me a clean heart, O God;

and renew a right spirit within me. "The sacrifices of God are a broken spirit: a broken and a contrite heart, O God, thou wilt not despise."

¶ If riches increase, set not your heart upon them" (Ps. lxii. 10) is a wise caution of special applicability to times like our own.

The description of God in the 86th Psalm as "full of compassion, gracious, long-suffering, and plenteous in mercy and truth," while affording little indication of what these terms implied to the writer, indicates a moral altitude which is sadly tarnished by the bitter imprecations upon his enemies which disfigure Psalm cix. In the same way the beautiful lament, "By the waters of Babylon there we sat down," is utterly spoiled by the tigerish hate of the last verse. Indeed, throughout these wonderful songs we so often find the most earnest aspirations for righteousness, the highest intensity of religious devotion, side by side with the most furious imprecations, as to awaken a doubt whether righteousness meant quite the same thing to the Hebrew as it does to us. In the main it must have been a tribal, not a universal, obligation.

As an expression of religious feeling, the language of the Psalms has perhaps never been surpassed. It is a striking fact that they are still in use all over the world by members of a different faith, who find in the Hebrew Psalms the simplest, the most fervent, and the most beautiful expression of the promptings of religious sentiment. While the aspirations after righteousness are intensely earnest and sincere, the current conception of the nature of that righteousness was not always correspondingly high. That such a conception must have been determined by the moral progress and the social conditions of the time can only be a difficulty in the eyes of those who do not remember how slowly the perception of the practical obligations of righteousness has grown in breadth and consistency. The Psalms, like the rest of the Old Testament books, are too

often disfigured by a ferocity towards the writers' enemies, which was the natural accompaniment to vivid but limited conceptions of the divine nature.

In the Book of Proverbs the seeker after moral truth would expect to find much that is valuable; and, in spite of, a great number of the aphorisms being of a local or archaic sort, appealing but slightly to modern sympathies, there is a mass of counsel which is worthy of greater attention than it commonly receives. The precept, "If thine enemy be hungry give him bread to eat, and if he be thirsty give him water to drink," embodies the highest moral tone of the book, and is of special value as showing how some of the sentiments supposed to be peculiar to Christianity existed in the older dispensation.

One noteworthy feature characterises this collection. A great and laudable emphasis is laid on the intellectual side of human nature. The writer is never tired of enjoining the acquisition of knowledge, instruction, discretion, understanding. He is the eloquent advocate of wisdom. "Happy is the man that findeth wisdom, and the man that getteth understanding..... She is more precious than rubies: and all the things thou canst desire are not to be compared unto her. Length of days is in her right hand; and in her left hand riches and honour. Her ways are ways of pleasantness, and all her paths are peace." The pious mind would perceive a strong discouragement of evil in the enumeration of things which are "an abomination unto the Lord"—"a proud look, a lying tongue, and hands that shed innocent blood. A heart that deviseth wicked imaginations, feet that be swift in running to mischief, a false witness that speaketh lies, and he that soweth discord among brethren." The feeling of tenderness to animals is found in the verse, "A righteous man regardeth the life of his beast," though it is not easy to reconcile with this the Jewish system of animal sacrifice. An enlargement of the individual aim is perceptible in the

sentence, "Righteousness exalteth a nation; but sin is a reproach to any people." The following well-known texts imply an ethical consciousness of a high order: "A soft answer turneth away wrath, but grievous words stir up anger." "He that is slow to anger is better than the mighty; and he that ruleth his spirit than he that taketh a city." "The discretion of a man deferreth his anger; and it is his glory to pass over a transgression." "A good name is rather to be chosen than great riches." The frequent assumption that wisdom, virtue, and prosperity are the gifts of God rather than essential fruits of personal effort and development is not altogether in harmony with modern ideas, but was, of course, a form of piety thoroughly natural to the zealous monotheism of the later Hebrews, and can hardly be said to detract from its ethical value. It is a somewhat curious fact that in Christian usage the Book of Proverbs, so rich in practical ethics, has been one of the most neglected of all the books of the Bible.

In the strangely sceptical Book of Ecclesiastes we find an injunction which may be endorsed by the most pronounced Agnostic: "Whatsoever thy hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom, in the grave, whither thou goest."

Amid the magnificent imagery of the prophets, various passages occur in which the natural virtues are inculcated, and formal religious observances lightly esteemed. But in proportion to the bulk of these writings such passages are comparatively few. The intense spiritual energy of the prophets took the form of denunciation of sin rather than exhortations to practical righteousness. As it is impossible to quote more than specimen passages, we adduce a few which appear to be of special moral value.

The very emphatic words in which Isaiah condemns formal religion are quite inconsistent with any belief in the divine origin of the Levitical system.

"To what purpose is the multitude of your sacrifices unto me? saith the Lord; I am full of the burnt offerings of rams and the fat of fed beasts; and I delight not in the blood of bullocks, or of lambs, or of he-goats. When ye come to appear before me, who hath required this at your hand, to tread my courts? Bring no more vain oblations; incense is an abomination unto me; the new moons and Sabbaths, the calling of assemblies, I cannot away with; it is iniquity, even the solemn meeting. Your new moons and your appointed feasts my soul hateth; they are a trouble unto me; I am weary to bear them. And when ye spread forth your hands, I will hide mine eyes from you: yea, when ye make many prayers I will not hear; your hands are full of blood. Wash you, make you clean; put away the evil of your doings from before mine eyes; cease to do evil; learn to do well; seek judgment, relieve the oppressed, judge the fatherless, plead for the widow" (Isaiah i. 11-17).

A better definition of religion it would not be easy to find. A glimpse of Deity as judging man from the standpoint of the divine perfection, rather than from that of human desert, is afforded by the words: "I, even I, am he that blotteth out thy transgressions *for mine own sake*, and will not remember thy sins" (Isaiah xliii. 25). "Is not this the fast that I have chosen? to loose the bands of wickedness, to undo the heavy burdens, and to let the oppressed go free, and that ye break every yoke? Is it not to deal thy bread to the hungry, and that thou bring the poor that are cast out to thy house? when thou seest the naked that thou cover him: and that thou hide not thyself from thine own flesh?" (Isaiah lviii. 6, 7)—again showing that the truest religion consists not in ritual, but in acts of beneficence. Even more strongly are sacrifices condemned in chapter lxvi. 3: "He that killeth an ox is as if he slew a man; he that sacrificeth a lamb, as if he cut off a dog's neck; he that offereth an oblation, as if he offered

swine's blood ; he that burneth incense, as if he blessed an idol."

In chapter xviii. of the book of Ezekiel we meet with strong opposition to the idea that God visits the sins of the fathers upon the children. The prophet takes great pains to show that, if a man do that which is right, he shall live, though his father may have been wicked ; while the wicked son of a good father shall die—in other words, that each shall reap the consequences of his own actions. This conception of justice, though by the prophet imperfectly applied to an Almighty God dealing with the creatures of his own handiwork, is still an advance upon that strange notion of moral responsibility current in most ancient nations, which punished a whole family for the sin of one of its members.

In reading large portions at a time of these prophetic writings, we become conscious that the continued storm of denunciation of idolatry does not represent the divine Being in the highest moral light ; the tone is very human, and the proneness of the people to idolatry is unaccountable if they really possessed a divinely-ordained system by which to guide their lives. In Hosea vi. 6 moral excellence, not punctilious ritual, is again demanded : "For I desired mercy, and not sacrifice ; and the knowledge of God more than burnt offerings." In chapter viii. 13 the idea is repeated : "They sacrifice flesh for the sacrifice of mine offerings, and eat it ; but the Lord accepteth them not ; now will he remember their iniquity, and visit their sins." Chapter x. 12 exhorts to "sow to yourselves in righteousness, reap in mercy." The same tone of disgust at the sacrificial system is observable in Amos v. 21 : "I hate, I despise your feast days, and I will not smell in your solemn assemblies. Though ye offer me burnt offerings and your meat offerings, I will not accept them ; neither will I regard the peace offerings of your fat beasts.....But let judgment run down as waters ; and righteousness as a mighty stream." And in a celebrated passage

the prophet Micah beautifully expressed an idea which seems to have taken strong hold upon the religious reformers of that far-off day : "Will the Lord be pleased with thousands of rams, or with ten thousands of rivers of oil ? Shall I give my first-born for my transgression, the fruit of my body for the sin of my soul ? He hath showed thee, O man, what is good ; and what doth the Lord require of thee but to do justly, and to love mercy, and to walk humbly with thy God ?" (Micah vi. 7, 8).

The latter part of this passage bears a striking resemblance in phraseology to that in Deuteronomy x. 12. In the end of his book Micah has aptly described the tenderness which, though frequently lost sight of, was an essential part of Israel's conception of God. "Who is a God like unto thee, that pardoneth iniquity and passeth by the transgression of the remnant of his heritage ? He retaineth not his anger for ever, because he delighteth in mercy." The conception of righteousness, as a practical duty springing from pure motives, is enforced by Zechariah : "Execute true judgment, and show mercy and compassions every man to his brother ; and oppress not the widow, nor the fatherless, the stranger, nor the poor ; and let none of you imagine evil against your brother in your heart" (Zechariah vii. 9). And the fatherhood of God is announced by Malachi : "Have we not all one Father ? hath not one God created us ? why do we deal treacherously every man against his brother, by profaning the covenant of our fathers ?" (Malachi ii. 10). The law of Moses is probably intended by this reference to a covenant. It was, no doubt, familiar to the Jewish people of the time of Malachi, though, with the exception of a passage at the conclusion of his short book, there is no direct reference to the Mosaic law in any of the prophets.

II.—Christianity.

The moral characteristics of the Christian system are not embodied in a fixed

code, like the Decalogue and the Levitical laws, but are scattered about in the numerous discourses, narratives, and letters contained in the New Testament. The most definite body of precepts is that attributed to Christ, in the early chapters of the first Gospel; and these precepts, though not uttered at one time, and in the order given, may be taken as fairly representative of his teaching. The passages known as the "beatitudes" breathe a spirit of resignation likely to comfort those afflicted by injustice or misfortune, though the moral beauty of the verses is certainly marred by the suggestion of a more than compensating reward. A great many of the passages in the "Sermon on the Mount" are unfeignedly to be commended, and one's only regret is that people in general, even those who believe these sayings to be divine, do not act up to them. The following passages embody a pure moral sentiment, and sometimes spiritual insight of a high and original order:—

"If thou bring thy gift to the altar and there rememberest that thy brother hath aught against thee, leave there thy gift before the altar, and go thy way; first be reconciled to thy brother, and then come and offer thy gift" (Matt. v. 23, 24). "Love your enemies, and pray for them that persecute you" (*ibid.*, verse 44). "When thou prayest, enter into thine inner chamber, and, having shut thy door, pray to thy Father which is in secret, and thy Father which seeth in secret shall recompense thee" (*ibid.*, vi. 6). "If ye then, being evil, know how to give good gifts unto your children, how much more shall your Father which is in heaven give good things to them that ask him? All things therefore whatsoever ye would that men should do unto you, even so do ye also unto them, for this is the Law and the Prophets" (*ibid.*, vii. 11, 12). "They that are whole have no need of a physician, but they that are sick.....I came not to call the righteous, but sinners" (*ibid.*, ix. 12, 13). "Not that which entereth into the mouth defileth the man,

but that which proceedeth out of the mouth, this defileth the man" (*ibid.*, xv. 11). "Lord, how oft shall my brother sin against me, and I forgive him, until seven times? Jesus saith unto him, 'I say not unto thee until seven times, but until seventy times seven'" (*ibid.*, xviii. 21, 22). "Suffer the little children, and forbid them not, to come unto me, for of such is the kingdom of heaven" (*ibid.*, xix. 14). "Take heed and keep yourselves from all covetousness, for a man's life consisteth not in the abundance of things which he possesseth" (Luke xii. 15).

Many of the sayings of Jesus have the striking merit of appealing straight to the heart, of aiming at the purifying of the motives rather than the regulation of external actions. It is not unwashed hands or anything which enters the mouth that defiles a man; the evil thoughts which give rise to immoral conduct are the real defilement. The tendency of his preaching was to attack sin at its source in the heart and conscience. The same thought is repeatedly found in the Old Testament, but Jesus gave it a powerful emphasis. Righteousness was to him a vital principle essentially different in character from ceremonial observance. Hypocrisy and formalism were visited with the severest condemnation, but for the repentant sinner he always had a word of tenderness and encouragement. Unlike so many of his more devoted followers, he appears to have shown towards sexual irregularity a certain degree of lenity. The rebuke of lust in Matt. v. 28 conveys no strong condemnation; while, in the mythical anecdote of the woman taken in adultery, the readiness with which he overlooks an apparently unrepented sin is a little surprising. Forgiveness of offences is strongly enjoined on the express ground that the implacable person has no right to expect the divine pardon for his own sins. While the analogy between human and divine forgiveness is imperfect, the effort to replace a lower conception by a higher

must always tend to self-control and the supremacy of the nobler feelings. In the simple and comprehensive "Lord's Prayer" we find one of the least offensive forms of petition. Love is held to be practically the fulfilment of the Jewish law—love to God, love to one's neighbour, even love to enemies, are placed on almost the same level of moral obligation; and, while the last may be an injunction impossible fully to obey, the effort to reach it is the surest antidote to the spirit of revenge, and one of the safeguards of social stability. In the nineteenth chapter of Matthew we have a striking anecdote. A rich young man asks Jesus the plain question what he shall do to obtain eternal life. A gentle rebuke by Jesus for calling him good is followed by the perfectly definite answer that obedience to the commandments will suffice. It is true that the questioner is advised to dispose of his wealth among the poor; but his reluctance to do this is not stated to be an absolute bar to entrance into the kingdom. It is a counsel of perfection which does not abrogate the earlier answer that in an upright life lies the way to the desired salvation. The parable of the publican and the Pharisee embodies a recommendation to religious sincerity of undoubted value, while in the beautiful story of the Good Samaritan we have a broad-minded and unconventional view of duty—a reproof of formalism and an insistence on kindly deeds—which has been too much neglected by the professed followers of the teacher. The wise and strikingly-expressed aphorism, "The Sabbath was made for man, and not man for the Sabbath," has been similarly disregarded. Putting aside theological prepossessions, and reading the Gospel records with an open mind, we perceive that by far the greatest stress of the teaching of Jesus is laid on acts of benevolence—on those social duties which were once scorned as mere "good works." Faith is no doubt magnified, and its influence exaggerated, particularly in the unqualified promise that whatever is asked in prayer shall be

received; but the fact that the greater portion of his public teaching dealt with practical duties, and not with any form of dogma, must always render secure the position of Jesus as a moral teacher of unique excellence. It is this quality which is the secret of his abiding influence, though, in spite of it, traditional ideas have attributed to him doctrines of a widely different character. If read literally, many of his maxims are extravagant and impossible; but to these a reasonable and not a slavish obedience needs to be rendered. That he performed a vast service to humanity by infusing into its consciousness a fresh, vivid, sincere, and ethical sentiment of religion cannot be doubted. It is the unwise narrowness of his followers that has so largely nullified its influence. On the whole, we may say with confidence that Jesus preached the virtues of sincerity, purity, simplicity, self-denial, and, above all, deeds of practical goodness.

Perhaps the most beautiful moral teaching of the whole Bible is that recorded in the fifteenth chapter of Luke, where we find a conception of God widely removed from that which underlies most theological dogmas. God is not angry with the sinner, but ready and anxious to forgive him—so much so that he will forget, as it were, his power and his majesty, and will seek after the erring one, as a shepherd for a lost sheep, until he finds and brings him home. The parable of the Prodigal Son illustrates this view in a homely and touching story, which must strike the unbiassed reader as being far truer, far more to be relied on as the very essence of religion, than those conceptions which bring into sharp relief the sterner aspects of the divine nature.

The words of Christ upon the cross, "Father, forgive them, for they know not what they do" (Luke xxiii. 34), breathe a sublime spirit of love for ignorant and sinful men.

Beyond an emphatic renewal of the command to love one another, we find in the fourth Gospel comparatively little

of practical moral value. There is, of course, much spiritual beauty in the discourses attributed to Jesus, but the general representation of his personality is so different from that of the other Gospel writers, the discrepancies between this narrative and theirs are so numerous, and a fixed theological purpose is so obviously manifested, that the difficulty of relying on the writer's accuracy becomes a very serious one.

A further difficulty in relation to Christian ethics is caused by the doubt as to the degree in which Jesus intended the Jewish legal system to be binding upon his followers. While he freely revised many of its details, and placed the general sentiment of obedience in a fresh and broader light, he does not appear to have abrogated the Mosaic law as a whole. On the contrary, he is said to have repeatedly declared that not one jot of it should pass away. It was a true instinct which led his followers to disregard, by slow degrees, the cumbrous ritual of a system calculated to destroy spirituality, rather than to keep it vitally active; but such a result does not seem to have been contemplated by Jesus himself.¹ Paul, the great apostle of the new faith, was the chief agent in breaking the link which bound Christianity to Judaism, and it is in his writings that we find the most complete and systematic exposition of Christian ethics. In the twelfth and thirteenth chapters of his Epistle to the Romans an ample statement of duties is set out, of which limited space prevents our giving more than a brief summary. Love is to be sincere, unselfish, making itself known in kind actions. Patience, fervour, joy, prayer, sympathy, humility, are to be characteristics of the disciple; evil is to be hated; the way to overcome it is to recompense it with good. Vengeance is forbidden, anger discouraged. The ruling civil power is to be obeyed, on the ground that it is the minister of

God's will, and its recognition by payment of tribute is lawful. The surest way to obey the commandments is to fulfil them from the spirit of love to others. A remarkable breadth and toleration with regard to the observance of the Sabbath and fast days and the use of foods and drinks is characteristic of Paul; and we are almost startled by the liberality of 1 Corinthians vii. 14, where he expressly states that "the unbelieving husband is sanctified in the wife, and the unbelieving wife is sanctified in the brother." The Apostle's teaching on the subject of marriage, and his evident belief in the superiority of celibacy, will, of course, appeal differently to different minds. If it is, or ever was, a rule that the unmarried person is "careful for the things of the Lord," while the married person strives to please a partner, it is a rule which admits of so many exceptions that it is of little worth. In an age which continued to attach an excessive value to rites and ceremonies, Paul's teaching that "all things are lawful, but all things are not expedient," was a notable advance in the direction of broad common sense. The fine panegyric of love in the thirteenth chapter of the same Epistle is too well-known to need quotation. It is one of those "purple patches," the words of which are more familiar to us than the spirit animating them. Paul's strong vein of good sense again appears in the declaration, "I had rather speak five words with my understanding that I might instruct others also, than ten thousand words in a tongue" unintelligible to his hearers (1 Corinthians xiv. 19).

In the fifth chapter of the Epistle to the Galatians we find one of Paul's favourite contrasts between the works of the flesh and the spirit, every form of wickedness being the outcome of the former, every variety of moral beauty the product of the latter. Against such a one-sided and arbitrary distinction it is a duty to protest. The idea that human beings are by nature hopelessly depraved, incapable of right conduct,

¹ For remarks on the character of Jesus see note at the end of this section.

except under divine influence, is both false and mischievous. That the higher impulses should rule the lower is evident. What is more, it is natural; but the idea that both lie within the normal capacity of human development is far from being a predominant idea with Paul, though it would be unjust to say that he never caught a glimpse of it. In the next chapter we find the higher suggestion, "Let us do good unto all men, especially unto them who are of the household of faith." Tenderness to the erring is inculcated in Galatians vi. 1: "Brethren, even if a man be overtaken in any trespass, ye which are spiritual restore such a one in the spirit of meekness, looking to thyself lest thou also be tempted." And in the same chapter is taught the inevitable sequence of cause and effect in human conduct: "Whatsoever a man soweth, that shall he also reap."

The Epistle to the Ephesians contains a large number of recommendations to practical goodness; but, while recognising their deeply religious spirit, it cannot be said that all the Apostle's arguments on the relations of husbands and wives are entirely consistent with enlightened reason.

In Philippians i. 9 Paul prays that the love of his converts "may abound yet more and more in knowledge and in all judgment," and presently adjures them, in lowliness of minds, to esteem others better than themselves, and again advises them to "work out their own salvation with fear and trembling" (though the expression, "for it is God which worketh in you," has been fruitful in perplexity), and to "do all things without murmurings and disputings." One may fairly allude to the remarkable fact that it is precisely where Christian ethics are most conspicuously wise and liberal in spirit that they have been most flagrantly ignored by the majority of Christian Churches in after times—a vivid testimony to the strength of a narrow and traditional formalism. Can we say that these passages have even yet fulfilled their purpose?

In Philippians iv. 8 Paul recommends that whatever is true, honourable, just, pure, lovely, and of good report should be thought on and practised—that is, in effect, he enjoins obedience to conscience, leaving to each man the duty of defining and applying the terms. The liberty involved in the caution, "Let no man judge you in meat, or in drink, or in respect of a fast day, or a Sabbath day," never seems to have been fully grasped by the Christian world in general, and even at the present day is but too often forgotten. "Put on, therefore, as God's elect, holy and beloved, a heart of compassion, kindness, humility, meekness, long suffering, forbearing one another, and forgiving one another" (Colossians iii. 12), lays the stress on the milder aspect of the Christian virtues; while 1 Thessalonians iv. 11, 12, gives the common-sense advice to mind one's own business and to earn one's own living.

In the following chapter the writer exhorts his brethren to be at peace among themselves, to "warn them that are unruly, comfort the feeble-minded, support the weak, be patient towards all men. See that none render evil for evil unto any man; but ever follow that which is good, both among yourselves, and to all men.....Prove all things; hold fast that which is good. Abstain from all appearance of evil." Apart from the vagueness attaching to the word "good," this counsel combines, in a high degree, practical utility with moral excellence. That children should "show piety towards their own family and requite their parents" (1 Timothy v. 4), and "if any provideth not for his own, and specially his own household, he hath denied the faith, and is worse than an unbeliever" (1 Timothy v. 8), are passages which show that Paul's practical mind disregarded (or knew nothing of) the injunction attributed to Jesus to hate one's own father and mother. The same Epistle inculcates a spirit of contentment which, though conducive to personal happiness, does little for social progress.

We are further told that "the love of money is the root of all evil"—a caution against greed of which we perceive the value, while we reject the literal accuracy of the statement. As against the desire for wealth, Paul prefers to dwell on the higher obligations to "righteousness, godliness, faith, love, patience, meekness."

The Epistle to Titus contains a good deal of counsel similar in tone to that which has been already quoted in recommendation of righteousness, meekness, and good works. The striking and suggestive saying, "Unto the pure all things are pure," long ago passed into proverbial philosophy.

In Hebrews x. 4 we meet with an emphatic declaration that "it is not possible for the blood of bulls and goats to take away sins," though the writer does not explain how the blood of Christ can do so. In each case the principle is the Pagan conception of sacrifice to an angry God, and the greater value of the sacrifice adds nothing to its efficiency in removing the guilt of others.

In James i. 27 we find the most practical definition of religion in the New Testament: "Pure religion and undefiled before our God and Father is this—to visit the fatherless and widows in their affliction, and to keep himself unspotted from the world." It can hardly be said that this definition comprehends the whole of religion, but it does embrace its most valuable elements. Throughout this Epistle faith is decried, and prominence given to acts of kindness and mercy, to self-control, patience, humility, consideration for others. The Apostle's piety is of a gentle, loveable, but somewhat credulous type, inasmuch as it holds that material blessings may be obtained by prayer. Spiritual pride seems foreign to his nature; he is ready to own that "in many things we all stumble."

The advice in 1 Peter iii. 8, 9, "Be ye all like-minded, compassionate, loving as brethren, tender-hearted, humble-minded, not rendering evil for evil, or reviling for reviling, but, contrariwise,

blessing," also dwells on the more specific Christian graces; while the reminder that it is better to "suffer for well-doing than for evil-doing" is a suggestion of the old stoic heroism that is welcome.

Though Peter and Paul were not always in doctrinal agreement, they unite in impressing upon wives the duty of obedience and subjection to their husbands—a view which the thought of to-day, while still pretending to believe it, finds "something musty." The Apostles also agree in their high estimation of the distinctive Christian virtue of charity, which, Peter tells us, "shall cover the multitude of sins"—a saying in sharp contrast with the implications of dogmatic creeds. The second Petrine Epistle, though non-apostolic, gives the excellent advice to "add to your faith virtue; and to virtue knowledge; and to knowledge temperance; and to temperance patience; and to patience godliness; and to godliness brotherly kindness; and to brotherly kindness charity."

The three short Epistles attributed to the Apostle John have for their main theme the quality of love; and some of his expressions are not without terseness and vigour—e.g., "Perfect love casteth out fear." A tone of rationalism pervades the verses, "If a man say, I love God, and hateth his brother, he is a liar; for he that loveth not his brother whom he hath seen, how can he love God whom he hath not seen? And this commandment have we from him, that he who loveth God love his brother also." Perhaps the rationalism really goes a little further than the writer intended.

NOTE.

A few words in reference to the character of Jesus are here inserted, not from any desire to introduce a controversial element into the book, but simply to meet the idea so often expressed, and still more often vaguely cherished, that the moral aspect of Christianity is not fully represented by its

ethical aphorisms, which are admitted to be devoid of originality, but that the system has to be considered as embodied in a personality of unapproachable moral grandeur. It is claimed that in its unique and perfect union of the human and the divine natures the character of Jesus Christ is the best possible evidence of the supernatural origin of his religion.

It is not inappropriate here to point out that, judging from the four Gospels themselves, this claim cannot be sustained. Disregarding the traditional halo with which all the acts and sayings of Jesus are usually surrounded, we find that he does not appear to have reached the highest conceivable point of even human excellence. How, then, can he fairly be thought divine? Interpreting them according to the ordinary and natural meaning of the words, various passages in the Gospels indicate that he was comparatively indifferent to the natural sentiments of family life,¹ going so far as to declare that the purpose of his coming was to cause dissension in households;² and that on at least one occasion he treated his mother with something very like rudeness.³ He many times gave utterance to injunctions which must be pronounced fantastic rather than practical or wise. We may find examples of this in the promise that prayer, even for material benefits, will be answered; in a doctrine of non-resistance which puts a premium on wrongdoing, and in the inculcation of indiscriminate almsgiving. He allowed a personal friend to die when (according to the story) he might have saved him from the pangs of death, and his sisters from a bitter sorrow; and, moreover, told his disciples that this friend's sickness would not have a fatal issue, when he must have known that it would.⁴ He so far gave way to temper in an undignified controversy as to speak of persons stated to have been among his own followers as having not God but the devil for their father.⁵

He fostered belief in the harmful notion

of demoniacal possession; he marred the purity of his exhortations to righteousness by the suggestion of an altogether disproportionate reward; he taught a revolting doctrine of hell; and, in particular, he is said to have rendered his public teaching obscure with the deliberate intention that his hearers might not be edified, but misled—indeed, that their faculties had been divinely obscured for the express purpose of preventing their conversion.⁶

A single fault is enough to demolish the claim to perfection, and here we have several faults—and, if the records are to be believed, faults not always of slight importance.

It is, of course, possible that the records may not, as they stand, be perfectly accurate; that corruptions and errors may have crept into the text. But, if so, what becomes of the Christian doctrine that these records were divinely inspired? And if that is abandoned, where is the evidence that the life of Jesus Christ was a divine and supernatural manifestation? What value attaches to a theory which, on the strength of doubtfully veracious documents, attributes both perfect manhood and perfect godhead to a being who, according to those very records, did not manifest either?

Again, human perfection implies the highest possible development of every part of human nature, intellectual as well as moral. There is no reason to suppose that Jesus was intellectually the greatest of men, even if he were morally the greatest.

A further point should not be forgotten, especially as a Christian writer uses it as an argument against the character of Buddha being morally perfect. Out of a life of between thirty and forty years the Christian Gospels deal (and that in a most fragmentary way) with the events of, at most, three years. Is it perfectly certain that Jesus committed no fault during the period of which no records whatever exist?

These considerations are adduced merely to show that, in our estimate of Christian ethics, the alleged perfect character of their Founder has not been left out of account.

¹ Matthew x. 37; Luke ii. 49, viii. 21.

² Matthew x. 34-36. ³ John ii. 4.

⁴ *Ibid.*, xi. ⁵ *Ibid.*, viii. 31 and 44.

⁶ John xii. 40.

HINDUISM

At first sight one would think that a religion professed by more than half the King's subjects would possess strong claims to the attention and interest of the English people. Yet there is no leading religion of which the English people know so little as that which prevails in our great Eastern dependency. The causes for this are not difficult to discover. One is that the various Hindu faiths rest on a firm basis of pessimism. They assume, with all the force of conviction, that life is a calamity rather than a field of duty and of pleasure, and thus fail to arouse the sympathy of the European, who persists in thinking that life is, on the whole, worth living. Another reason is that Hinduism, whatever it may be in theory, is in practice a system of idolatry, of the worship of a vast multitude of foolish and ineffectual gods. Another potent cause of our indifference is that in Brahmanism the subtle Indian mind has spun a speculative web of such extraordinary complexity, and such portentous dimensions, that fully to understand it would exhaust the labours of a lifetime. Within our brief limits it is utterly impossible to give the baldest outline of the religious beliefs of the Indian people, and the task is therefore better left unattempted. Even our simple design of giving a brief view of the best moral features of the Brahmanic faith is hampered by a certain difficulty of finding suitable examples among the dense clouds of metaphysical extravagance, and the endless puerile ceremonial, which form so large a proportion of the sacred books of the East.

From these books it is possible to extract a philosophy of pure and lofty spiritual tendency, though the popular belief has added to it the worship of a vast number of trivial gods and the

practice of rites, sacrifices, and austerities, with which none but a monk of the Thebaid could sympathise. Professor Monier Williams says: "It is remarkable that, with all their diversities, the Hindu populations throughout India have a religious faith which, preserved as it is in one language and one literature, furnishes a good evidence of the original unity of the Indo-Aryan immigrants, while it faithfully reflects the present diversified character of the vast country in which it prevails. It is a creed based on an original, simple, pantheistic doctrine, but branching out into an endless variety of polytheistic superstitions."¹ The leading feature of this creed is that "nothing really exists but the one Universal Spirit called Brahman, and whatever appears to exist separately from that Spirit is mere illusion"²—a doctrine which is essentially an anticipation of certain speculations of our own time that appear to have been regarded by their authors as the highest attainments of philosophical theism. Hinduism is "all-tolerant, all-compliant, all-comprehensive, all-absorbing. It has its spiritual and its material aspect, its esoteric and exoteric, its subjective and objective, its rational and irrational, its pure and impure.....Those who rest in ceremonial observances find it all-sufficient; those who deny the efficacy of works, and make faith the one requisite, need not wander from its pale; those who are addicted to sensual objects may have their tastes gratified; those who delight in meditating on the nature of God and man, the relation of matter and spirit, the mystery of separate existence, and the origin of evil, may here indulge their love of speculation."³ The earlier por-

¹ *Hinduism*, pp. 10-11.

² *Ibid.*, p. 11.

³ *Ibid.*, pp. 12-13.

tions of this enormous Sanskrit literature embody what may be termed physiolatry, or the worship of material forms, another represents ritual and sacrifice; a *tîttv* expresses rationalistic and pantheistic philosophy; the law books contain the regulations of caste and domestic life; while other books represent the principle of love for and devotion to personal gods. The whole of these books are not regarded as being specially sacred in their origin, though large portions of them are held to have been given by direct revelation from Divine sources, the remainder being regarded as valuable tradition.

Hinduism is a faith which does not gather round the person of a real being, whether human or believed to be Divine. It is based on a collection of ancient Sanskrit writings, the principal of which are known as the Vedas, a word implying knowledge. These Vedas are in four divisions:—

The Rig-Veda, or Hymn of Praise.

The Sama-Veda, or Book of Chants.

The Yagur-Veda, or Book of Sacrificial Formulas.

The Atharva-Veda, or Book of Incantations.

The first of these is probably, with the exception of the Egyptian "Book of the Dead," the oldest literary document in the world, and contains hymns in use by the Aryan tribes who settled in India between 1,500 and 2,000 years before Christ. A large portion of the other Vedas consists of extracts from the Rig-Veda, though the fourth contains many hymns of a later date, and of Brahmanic origin.

The pantheistic doctrines of the Brahmins are well expressed in the following extract from that portion of the Vedas known as the Upanishads, a term implying that which lies beneath the surface:—

"Whate'er exists within this universe
Is all to be regarded as enveloped
By the great Lord, as if wrapped in a vesture.
There is one only Being who exists
Unmoved, yet moving swifter than the mind ;

Who far outstrips the senses, though as gods
They strive to reach him ; who, himself at rest,
Transcends the fleetest flights of other beings ;
Who, like the air, supports all vital action.
He moves, yet moves not ; he is far, yet near ;
He is within this universe. Whoe'er behold ;
All living creatures as in him, and him—
The universal Spirit—as in all,
Henceforth regards no creature with contempt."

This Upanishad philosophy teaches the following doctrines:—

(1) The eternity of the soul, both before and after its earthly life.

(2) The eternity of the matter or substance out of which the universe has been evolved.

(3) That the soul can exercise conscious thought and volition only when connected by means of bodily organism with external objects.

(4) That in the union of soul and body lies the source of human misery.

(5) That, in order to accomplish the working out of the consequences of acts, the soul must undergo punishments or receive rewards, though these punishments and rewards are neither complete nor final.

(6) That the transmigration of the soul through many bodies is the true explanation of the existence of evil in the world.¹

A close examination of these books has shown modern scholars that the social condition of the people among whom the Rig-Veda originated was not purely pastoral or nomadic, as had been supposed, but, on the contrary, was one of comparative civilisation. They dwelt in towns and cities; their kings were powerful and wealthy. They practised the arts of agriculture, weaving, melting precious metals, the manufacture of mail and golden ornaments. They used the needle for the making of clothes; they had musical instruments to delight the ear. In ships they dared the perils of the ocean; they had some knowledge of medicine, astronomy, law. The race that produced the Vedas had within it the possibilities of Western civilisation.

While the Vedas represent the first distinct period in the history of the Hindu religion, in which, for the most part, the elementary powers of nature

¹ *Hinduism*, pp. 49-51.

were deified and worshipped, the second period is represented by the Brahmanic system, in which a higher level of speculative thought and moral aspiration is discernible, though with a rapidly-growing tendency to ritual and formality. The main features of this period are the body of laws attributed to Manu, and the great epic poems of the Ramayana and the Mahābhārata. The former of these poems is an account of the seventh incarnation of the God Vishnu. The latter, the longest poetic work known to exist, relates, in some 200,000 lines, the quarrels of certain rival families, many legends and episodes being interspersed. One of these episodes, and the most valuable portion of the work, forms a volume by itself; it is known as the "Bhagavad-gita," or "Revelations from the Deity," and contains passages of great beauty and depth of insight.

The third period is that of the *Puranas*, or traditions upon which the popular idolatrous creed is founded, which creed represents a great decline from the comparative simplicity of the older faith.

The fervent sincerity of the Hindu faith (taking it at its best) is well exemplified in the following verses from the Vedic hymns to Varuna, best of the gods:—

"However we break thy laws from day to day,
men as we are, O god Varuna,
Do not deliver us unto death, nor to the blow
of the furious, nor to the wrath of the
spiteful."¹

Let me not yet, O Varuna! enter into the
house of clay; have mercy, almighty, have
mercy!

If I go along trembling, like a cloud driven
by the wind, have mercy, almighty, have
mercy!

Through want of strength, thou strong and
bright god, have I done wrong; have mercy,
almighty, have mercy!

Thirst came upon the worshipper, though he
stood in the midst of the waters! have
mercy, almighty, have mercy!

Whenever we men, O Varuna, commit an
offence before the heavenly host, whenever

we break the law through thoughtlessness,
punish us not, O God, for that offence."²

So many different conceptions are embodied in the Vedas that consistency is not to be looked for; but the fact that hundreds of years before the Christian era such ideas as the following could be expressed by "heathen" thinkers deserves to be noted. The quotation is from one of the hymns of the Rig-Veda, rendered into English verse by Sir M. Monier Williams:—

"What god shall we adore with sacrifice?
Him let us praise, the golden child that rose
In the beginning, who was born the lord—
The one sole lord of all that is—who made
The earth and formed the sky, who giveth life,
Who giveth strength, whose bidding gods
revere,
Whose hiding-place is immortality,
Whose shadow, death; who by his might is
king
Of all the breathing, sleeping, waking world."³

Another hymn expresses a familiar Christian conception:—

"The mighty Varuna, who rules above, looks
down
Upon these worlds his kingdom, as if close at
hand.
When men imagine they do aught by stealth,
he knows it.
No one can stand or walk or softly glide
along,
Or hide in dark recess or lurk in secret cell,
But Varuna detects him, and his movements
spies.
Two persons may devise some plot, together
sitting,
And think themselves alone; but he, the king,
is there—
A third—and sees all."⁴

A pure, broad, human feeling animates the following extract from a hymn to Indra:—

"Thou art our guardian, advocate, and friend,
A brother, father, mother, all combined.
Most fatherly of fathers, we are thine,
And thou art ours. Oh! let thy pitying soul
Turn to us in compassion when we praise thee,
And slay us not for one sin or for many.
Deliver us to-day, to-morrow, every day."⁴

The ideas expressed in these extracts

¹ Clodd, *Childhood of Religions*, p. 147.

² Monier Williams, *Hinduism*, p. 27.

³ *Ibid*, p. 28.

⁴ *Ibid*, p. 29.

¹ Clodd, *Childhood of Religions*, p. 146.

are practically identical with the conceptions which the most advanced communities hold concerning a Supreme Being. It would be a mistake, however, to imagine that all these ancient hymns are of the same lofty type. On the contrary, puerile formalities and foolish superstitions abound in them. Although in a general sense religious ideas widen with the growth of civilisation, they have their periods of retrogression; the flowing tide is followed by the ebb. Religious faith is, indeed, peculiarly liable to degenerate when handed down from great minds to small ones. Creeds, sacrifices, ceremonies spring from an inability to grasp the great conceptions in the light of which their futility is manifested. The oldest portions of the Vedas are precisely those which do not countenance the monstrous polytheism of later times. According to Sir M. Monier Williams, they do not "support any of those objectionable practices, superstitions, and opinions of the present day for which they were once, through ignorance of their contents, supposed to be an authority. The Vedic hymns contain no allusion to the doctrine of transmigration of souls, which is a conspicuous characteristic of the Hindu creed in the later system. Nor do they afford any sanction to the prohibition of widow-marriages, the encouragement of child-marriages, the iron rules of caste, and the interdiction of foreign travel. Nor is there in them any evidence that the personifications of the forces of nature were represented by images or symbols carved out of wood or stone. On the contrary, it may be taken as almost certain that there were no idols and no temples to hold images in Vedic times."

Man's consciousness of sin pointed out to him the need of punishment, but in all ancient religions the sense of individual responsibility was weak. As long as a given punishment was inflicted for a given sin it mattered little on whom it fell. It was quite a secondary considera-

tion whether the sinner paid the penalty, in his own person or by deputy. This idea conflicts with the most elementary modern ideas of justice, but it seems to have been practically universal in ancient communities. From it sprang that conception of vicarious sacrifice which has so greatly influenced the religions that have risen to power among men. Human ingenuity soon discovered that expiation was easier than suffering in person; and, as a result, a system of expiatory sacrifice gradually came into operation. This demanded a priesthood. The rise of the Brahmins to almost unlimited power brought about a further degeneration of the earlier religious faith. Sacrifice is religion made easy; consequently, sacrifice spread until the land was saturated with blood, and the elaborate ritual required a vast organisation of priests for its due performance. Against this system Gautama, Buddha, and many Brahman philosophers rose in righteous and successful revolt. The truth that vicarious suffering cannot benefit the sinner was successfully brought home to the mass of the people until sacrifices had virtually ceased, and there was no land where animal life was so tenderly revered as it was, and is, in India. The Brahman doctrine of the identity of the human soul with the divine involved the perception that the caste distinctions invented by the priests were useless, though the doctrine of caste has taken so deep a root in the life of the Hindus that no power seems likely to destroy it entirely. The following passage expresses this Pantheistic phase of Brahmanism:—

I am the taste in water; I am the light of the sun and moon; I am Om¹ in all the Vedas, sound in space, and manliness in human beings; I am the fragrant smell in the earth, refuge in the fire; I am life in all beings, and penance in those who perform penance.*

The *Bhagavad-gita* is fairly rich in

¹ Om is the closest designation of the Deity.

* *Sacred Books of the East*, vol. viii., *Bhagavad-gita*, ch. vii.

passages worthy of quotation, of which the following may be adduced as specimens :—

He whose heart is not agitated in the midst of calamities, who has no longing for pleasures, and from whom the feelings of affection, fear, and wrath have departed, is called a sage of steady mind (ch. ii.).

* He sees truly who sees all actions to be in every way done by Nature alone, and likewise the self to be not the doer (ch. xiii.).

That gift is said to be good which is given because it ought to be given to one who can do no service in return, at a proper place and time, and to a proper person (ch. xvii.).

Here is a little sermon on self-control :—

The self-restrained man, who moves among objects with senses under the control of his own self, and free from affection and aversion, obtains tranquillity. When there is tranquillity all his miseries are destroyed, for the mind of him whose heart is tranquil soon becomes steady. He who is not self-restrained has no steadiness of mind ; nor has he who is not self-restrained perseverance in the pursuit of self-knowledge. There is no tranquillity for him who does not persevere in the pursuit of self-knowledge, and whence can there be happiness for one who is not tranquil ? For the heart which follows the rambling senses leads away his judgment, as the wind leads a boat astray upon the waters (*Bhagavad-gita*, ch. ii. p. 70).

The extracts from this book given by Sir M. Monier Williams are in verse :—

“Whate’er thou dost perform, whate’er thou eatest,

Whate’er thou givest to the poor, whate’er
Thou offerest in sacrifice, whate’er
Thou doest as an act of holy penance,
Do all as if to me, O Arjuna.”¹

Another parallels a story in Luke :—

“Entangled in a hundred worldly snares,
Self-seeking men, by ignorance deluded,
Strive by unrighteous means to pile up riches.
Then, in their self-complacency they say :
‘This acquisition I have made to-day,
That I will gain to-morrow, so much self
Is hoarded up already, so much more
Remains that I have yet to treasure up.
This enemy I have destroyed, him also,
And others in their turn I will despatch.
I am a lord ; I will enjoy myself ;
I’m wealthy, noble, strong, successful, happy,
I’m absolutely perfect, no one else
In all the world can be compared to me.

Now I will offer up a sacrifice,
Give gifts with lavish hand and be triumphant.
Such men, befooled by endless, vain conceits,
Caught in the meshes of the world’s illusion,
Immersed in sensuality, descend
Down to the foulest hell of unclean spirits.”¹

The God Krishna exhorts Arjuna to energetic action in these admirable lines :—

“Perform all necessary acts, for action
Is better than inaction, none can live
By sitting still and doing nought ; it is
By action only that a man attains
Immunity from action. Yet in working
Ne’er work for recompense ; let the act’s
 motive
Be in the act itself. Know that work
Proceeds from the Supreme. I am the pattern
For man to follow ; know that I have done
All acts already, nought remains for me
To gain by action, yet I work for ever
Unweariedly, and this whole universe
Would perish if I did not work my work.”²

The *Bhagavad-gita* has been versified by Sir Edwin Arnold, under the title of “The Song Celestial,” from which a few quotations may be given as illustrations of its remarkable philosophic power and religious beauty :—

“Indestructible,
Learn thou, the Life is, spreading life through
 all,
It cannot anywhere, by any means,
Be anywise diminished, stayed, or changed,
But for these fleeting frames which it informs
With spirit deathless, endless, infinite,
They perish.” (Book II.)

“Never the spirit was born ; the spirit shall
 case to be never ;
Never was time it was not ; End and
 Beginning are dreams !
Birthless, and deathless, and changeless
 remaineth the spirit for ever ;
Death hath not touched it at all, dead
 though the house of it seems.” (*Ibid.*)

“That man alone is wise
Who keeps the mastery of himself ! If one
Ponders on objects of the sense, there springs
Attraction ; from attraction grows desire ;
Desire flames to fierce passion, passion breeds
Recklessness, then the memory, all betrayed,
Lets noble purpose go, and saps the mind,
Till purpose, mind, and man are all undone.” (*Ibid.*)

“No man shall ’scape from act

¹ *Hinduism*, p. 212.

² *Hinduism*, p. 218.

³ *Ibid.*, p. 218.

By shunning action; nay, and none shall come
By mere renouncements unto perfectness."

(Book iii.)

"Resist the false, soft sinfulness which saps
Knowledge and judgment! Yea, the world
is strong,

But what discerns it stronger, and the mind
Strongest; and high o'er all the ruling Soul."

(*Ibid.*)

"Religion is not his who too much fasts
Or too much feasts, nor his who sleeps away
An idle mind; nor his who wears to waste
His strength in vigils. Nay, Arjuna! call
That the true piety which most removes
Earth-aches and ills, where one is moderate
In eating, and in resting, and in sport;
Measured in wish and act; sleeping betimes,
Waking betimes for duty."

(Book vi.)

"No heart that holds one right desire
Treadeth the road of loss! He who should
fail,

Desiring righteousness, cometh at death
Unto the Region of the Just; dwells there
Measureless years, and, being born anew,
Beginneth life again in some fair home
Amid the mild and happy."

(*Ibid.*)

"Who hateth nought
Of all which lives, living himself benign,
Compassionate, from arrogance exempt,
Exempt from love of self, unchangeable
By good or ill; patient, contented, firm
In faith, mastering himself, true to his word,
Seeking me, heart and soul; vowed unto me—
That man I love! Who humbleth not his
kind,

And is not troubled by them; clear of wrath,
Living too high for gladness, grief, or fear,
That man I love!"

(Book xii.)

"Fearlessness, singleness of soul, the will
Always to strive for wisdom; opened hand
And governed appetites; and piety,
And love of lonely study; humbleness,
Uprightness, heed to injure nought which
lives,

Truthfulness, slowness unto wrath, a mind
That lightly letteth go what others prize;
And equanimity and charity
Which spieth no man's faults; and tenderness
Towards all that suffer; a contented heart,
Fluttered by no desires; a bearing mild,
Modest, and grave, with manhood nobly
mixed,

With patience, fortitude, and purity;

An unvengeful spirit, never given

To rate itself too high—such be the signs,

O Indian Prince! of him whose feet are set

On that fair path which leads to heavenly
birth."

(Book xvi.)

This eloquent epitome of virtue is
alone sufficient to show how little the
East has to learn from the West in regard

to the essential ideas of religion. We
know of no other passage in the sacred
books of any religion which more beauti-
fully expresses the union of man's finer
qualities. It enables one to understand
Schlegel's outburst of delight on reading
the *Bhagavad-gita*, and the warm appreci-
ation it has met with from many other
European scholars.

We may compare the prose versions
of the last two extracts as given in the
Sacred Books of the East with the
poetical rendering of Sir Edwin Arnold,
who has certainly improved the form
while retaining the essential idea:—

That devotee of mine who hates no being, who
is friendly and compassionate, who is free from
egoism, and from the idea that this or that is
mine, to whom happiness and misery are alike,
who is forgiving, contented, constantly devoted,
self-restrained, and firm in his determinations,
and whose mind and understanding are devoted
to me, he is dear to me. He through whom the
world is not agitated, and who is not agitated by
the world, who is free from joy, and anger, and
fear, and agitation, he, too, is dear to me
(ch. 12).

Freedom from fear, purity of heart, perse-
verance in pursuit of knowledge and abstraction
of mind, gifts, self-restraint, and sacrifice, study
of the Vedas, penance, straightforwardness,
harmlessness, truth, freedom from anger, renun-
ciation, tranquillity, freedom from the habit of
backbiting, compassion for all beings, freedom
from avarice, gentleness, modesty, absence of
vain activity, noble-mindedness, forgiveness,
courage, purity, freedom from a desire to injure
others, absence of vanity—these are his who is
born to godlike endowments (ch. 16).

Another episode in the *Mahābhārata*,
called the *Sanatsugāthya*, contains a fine
conception of knowledge:—

It appears not as white, as red, nor, again, as
black, nor again as grey, nor tawny. It dwells
not on earth, nor in the sky; nor does it bear a
body in this ocean-like world. It is not in the
stars, nor does it dwell in the lightning, nor is its
form to be seen in the clouds, nor in the air, nor
in the deities; it is not to be seen in the moon,
nor in the sun. It is not to be seen in texts nor
hymns. It is seen in the self of a man of high
views (ch. 4).

In the same book we find the brief
and valuable injunction that "we should
ever and always be doing good" (ch. 6).

From another division of the great

epic, known as the *Anugītā*, we extract the following :—

A man who is the friend of all, who endures all, who is devoted to tranquillity, who has subdued his senses, and from whom fear and wrath have departed, and who is self-possessed, is released. He who moves among all beings as if they were like himself, who is self-controlled, pure, free from vanity and egoism, he is indeed released from everything. And he who is released, who is equable towards both life and death, and likewise pleasure and pain, and gain and loss, and what is agreeable and odious..... he who has no enemy, who has no kinsman, who has no child, who has abandoned piety, wealth, and lust altogether, and who has no desire, is released (ch. 4).

Such complete detachment from all that, to the European, makes life worth living is neither practicable nor desirable to the Western temperament; but the ideal of utter purity and self-control is valuable as a corrective to an incessant and absorbing activity in material pursuits.

Another passage from the *Anugītā* shows considerable philosophic insight. It is from a dialogue between the Mind and the Senses. The Mind says :—

The nose smells not without me; the tongue does not perceive taste; the eye does not take in colour; the skin does not become aware of any object of touch. Without me the ear does not, in any way, hear sound. I am the eternal chief among all elements. Without me the senses never shine, like an empty dwelling, or like fires, the flames of which are extinct.

To this the Senses reply :—

This would be true, as you believe, if you, without us, enjoyed the enjoyments derived from our objects. If, when we are extinct, there is pleasure and support of life, and if you enjoyed enjoyments, then what you believe is true..... Granted that we have connections with our respective qualities, and granted that we have no perception of each other's qualities; still, without us you have no perception, and so long no happiness can accrue to you (ch. 7).

Another aphorism from the same book is worth remembering :—

The instructor, the learner, the hearer, and the enemy, are always within (ch. 11).

A close resemblance to Shakespeare's

"There is no darkness but ignorance" is found in the expression, "By pure knowledge one is released from all sins" (*Ibid*, ch. 35). And the proverb, "Virtue is its own reward," is analogous to this: "Those wise and talented men, who perform actions with faith, free from any connection with expectations, perceive correctly" (*ibid*).

The *Anugītā* sums up the duties of the good as follows :—

Joy, pleasure, nobility, enlightenment, and happiness also, absence of stinginess, absence of fear, contentment, faith, forgiveness, courage, harmlessness, equability, truth, straightforwardness, absence of wrath, absence of calumny, purity, dexterity, valour (ch. 23).

In the *Laws of Manu* we find a great body of precepts which enforce the practical duties of life from the Brahman point of view. Many, perhaps the majority, of these laws are ceremonious to a degree which appears to us absurd, as well as tedious and vexatious in their strict regulations of the most trivial acts of life, and even the commonest functions of the body. But on this evidence of a priestly power, more galling than any which in the Middle Ages vexed and cramped the growing life of Europe, it is no part of our purpose to dwell. Rather would we call attention to a few passages in which the priesthood of ancient India enacted laws wise in themselves and beneficial in their tendency.

The following quotations are from the English translation of the *Laws of Manu* contained in vol. xxv. of the *Sacred Books of the East* :—

To act solely from a desire for rewards is not laudable, yet an exemption from that desire is not to be found in this world (ii. 2).

Desire is never extinguished by the enjoyment of desired objects. It only grows stronger, like a fire fed with clarified butter (ii. 94).

By honouring his father, his mother, and his teacher, all that ought to be done by man is accomplished; that is clearly the highest duty; every other act is a subordinate duty (ii. 237).

Where women are honoured there the gods are pleased, but where they are not honoured no sacred rite yields rewards (iii. 56).

A guest who is sent by the setting sun in the evening must not be driven away by a householder. Whether he have come at supper-time,

or at an inopportune moment, he must not stay in the house without entertainment (iii. 105).

Let a man not, even though in pain, speak words cutting others to the quick; let him not injure others in thought or deed; let him not utter speeches which make others afraid of him, since that will prevent him from gaining heaven (ii. 161).

Let him say what is true, let him say what is pleasing, let him utter no disagreeable truth, and let him utter no agreeable falsehood; that is the eternal law (iv. 138).

Let him not insult those who have redundant limbs, or are deficient in limbs, nor those destitute of knowledge, nor very aged men, nor those who have no beauty or wealth, nor those who are of low birth (iv. 141).

Let him, though suffering in consequence of his righteousness, never turn his heart to unrighteousness, for he will see the speedy overthrow of unrighteous wicked men (iv. 171).

Unrighteousness practised in this world does not at once produce its fruit, but, advancing slowly, it cuts off the roots of him who committed it (iv. 172).

If the punishment falls not on the offender himself, it falls on his sons; if not on the sons, at least on his grandsons; but an iniquity once committed never fails to produce fruit to him who wrought it (iv. 173).

Let a man avoid the acquisition of wealth and the gratification of his desires, if they are opposed to the sacred law or offensive to men (iv. 176).

Giving no pain to any creature, let him solely accumulate spiritual merit, for the sake of acquiring a companion in the next world (iv. 238).

For in the next world neither father nor mother, nor sons, nor relations, stay to be his companions; spiritual merit alone remains with him (iv. 239).

Single is each being born, single it dies; single it enjoys the reward of its virtue, single it suffers the punishment of its sin (iv. 240).

These allusions to a future state appear to embody the doctrine of *Karma*, that by the practice of good deeds a degree of spiritual merit is acquired which will reduce the chances of future, and most probably painful, re-births. They teach, not the immortality of the individual soul, but rather the means by which the soul may escape from immortality—may least painfully lay down the burden of existence. The emphasis with which the results of unrighteousness are pronounced to be inevitable reveals a deep moral insight, while the tender consideration for others shown in many of the ancient laws is a highly commendable feature.

The following verses are given by Professor Monier Williams :—

“ Depend not on another, rather lean
Upon thyself; trust to thine own exertions.
Subjection to another’s will gives pain;
True happiness consists in self-reliance.

(iv. 160).

“ Strive to complete the task thou hast commenced;

Wearied, renew thy efforts once again;
Again fatigued, once more the work begin;
So shalt thou earn success and fortune win.”

(ix. 300).

Here is a striking appeal to conscience :—

If thou thinkest, O friend of virtue! with respect to thyself, “ I am alone,” know that that sage who witnesses all virtuous acts and all crimes resides ever in thy heart (vi. 91).

The following need no comment :—

If a man does anything for the sake of his happiness in another world to the detriment of those whom he is bound to maintain, that produces evil results for him, both while he lives and when he is dead (x. 10).

He only is a perfect man who consists of three persons united—his wife, himself, and his offspring (ix. 47).

In proportion as a man who has done wrong himself confesses it, even so far is he freed from guilt, as a snake from its slough (xi. 229).

In proportion as his heart loathes his evil deed, even so far is his body freed from that guilt (xi. 230).

He who has committed a sin and has repented is freed from that sin; but he is purified only by the resolution of ceasing to sin, and thinking: “ I will do so no more.”

How much more simple, how far more conducive to peace, is such a doctrine than the futile reliance on a system of vicarious sacrifice!

In their purer parts the Hindu scriptures do not rank the great ones of the earth beyond the reach of the law :—

Day and night a king must strenuously exert himself to conquer his senses, for he alone who has conquered his own senses can keep his subjects in obedience (vii. 44).

Where another common man would be fined one *kārshāpāna*, the king shall be fined one thousand; that is the settled rule (viii. 336).

Gambling and betting let the king exclude from his realm; those two vices cause the destruction of the kingdoms of princes (ix. 221).

One commodity mixed with another must not be sold as pure, nor bad wine as good, nor less than the proper quantity or weight (viii. 203).

Neither a father, nor a teacher, nor a friend, nor a mother, nor a wife, nor a son, nor a domestic priest, must be left unpunished by a king if they do not keep within their duty (viii. 335).

In the "Sacred Laws of the Aryas" we find a singular, but probably wholesome, punishment for wife-desertion :—

He who has unjustly forsaken his wife shall put on an ass's skin with the hair turned outside, and beg in seven houses, saying : " Give alms to him who forsook his wife." That shall be his livelihood for six months.

The curious persistency with which the Hindu mind clings to its vague notions of pre-existence is shown by the subjoined quotations from a code which appeared about the middle of the first century of our era—*i.e.*, probably 500 years later than that of Manu :—

The success of every action depends on destiny and on a man's own effort ; but destiny is evidently nothing but the result of a man's act in a former state of existence.

Some expect the whole result from destiny, or from the inherent nature of a thing ; some expect it from the lapse of time, and some from a man's own effort ; other persons of wiser judgment expect it from a combination of all these.¹

The extracts given show with sufficient clearness that, as Sir Monier Williams says, " the Hindus are a profoundly religious people. A religion of some kind they must have—a religion which will stir the depths of the heart, and give room for the exercise of faith and love." It is interesting to note that, in spite of the absorbingly religious spirit manifested in Hinduism—a spirit which, for the most part, runs in the direction of superstition—the claims of the intellectual and critical faculties of humanity are not entirely overlooked. Compared with the gross credulity of the age in which it arose, the teaching of Gautama must be pronounced of a powerfully Rationalistic tendency. Though ultimately overwhelmed by the inferior faith

against which it struggled for a time successfully, and driven from its native soil, Buddhism may be termed the Protestantism of the Indian religions. Perhaps its influence would, in the long run, have been greater still had it not been (at least in the estimation of Europeans) so heavily weighted by its mass of mystical and unverifiable doctrines.

To the modern Rationalist the following vigorously expressed piece of scepticism, with its curious mingling of sense and nonsense, will come as a pleasant surprise. It embodies the opinions of a Materialistic sect known as the Carvakas, which at some apparently unknown period once flourished in India :—

' No heaven exists, no final liberation,
No soul, no other world, no rights of caste,
No recompense for acts.....
If victims, slaughtered at a sacrifice,
Are raised to heavenly mansions, why should
not

The sacrificer immolate his father ?
If offerings of food can satisfy
Hungry departed spirits, why supply
The man, who goes a journey, with provisions ?
His friend at home can feed him with oblations.
If those abiding in celestial spheres
Are filled with food presented upon earth,
Why should not those who live in upper
stories

Be nourished by a meal spread out below ?
While life endures let life be spent in ease
And merriment ; let a man borrow money
From all his friends, and feast on melted
butter.

How can this body, when reduced to dust,
Revisit earth ? And, if a ghost can pass
To other worlds, why does not strong
affection

For those he leaves behind attract him back ?
The costly rites enjoined for those who die
Are a mere means of livelihood, devised
By sacerdotal cunning—nothing more.
The three composers of the triple Veda
Were rogues, or evil spirits, or buffoons.
The recitation of mysterious words
And jabber of the priests is simple nonsense."²

If all religious dogmas had been judged by this sceptical and logical spirit, the world would have been the happier and better.

¹ Monier Williams's *Hinduism*, p. 71.

² *Hinduism*, p. 184.

³ Monier Williams's *Hinduism*, p. 225.

BUDDHISM

BUDDHISM is a system of faith, philosophy, and practice originated, in the sixth century before the Christian era, by Prince Siddhartha, son of the ruler of one of the small States, probably Nepal, of Northern India. This remarkable man is known to posterity by various other names, such as Sakya-Muni, or the Sage of the Sakya tribe; Bhagava, the blessed one; Dharma-rajā, the king of righteousness; Buddha, the enlightened one. His family name was Gautama, which term, as the most convenient, we shall employ in referring to him.

Saddened by the degeneration which had overtaken the ancient faith of Brahmanism under the sway of the priestly caste, Gautama set himself, after years of spiritual struggle and intense meditation, to establish a system without theological teaching of any sort, having no definite theories concerning the Supreme Being or the immortality of the soul, but basing its appeal on the importance of good works and moral purity. Some of its doctrines, notably those of Karma and Nirvāna, are of a nature which does not appeal to the sympathy of the European, and are indeed scarcely capable of being clearly expressed; but to the Oriental these dreamy abstractions are full of charm, and largely aid in giving Buddhism a force and verity which the faiths of the West struggle to maintain in the restless bosom of the modern world.

Buddhism cannot be understood without a knowledge of the life of its founder, of the conditions amid which he lived, and under which his great faith arose. But it is no part of our purpose to outline the life of Sakya Muni. A youth of luxury, saddened by spiritual uneasiness; a brief span of wedded love; the renunciation of home, wife, and child; a few years of earnest striving for the truth; the dawn, and then the noontide, of

enlightenment; and, finally, a long life of poverty, of preaching, and of doing good—these constitute a record of a nature so pure and beautiful as to win not merely the passionate devotion of his followers, but the love and esteem of all to whom knowledge of him has come.

No ethical system can be entirely original, since in every case its broad features have been derived from a common but ever-growing experience. Gautama gave a wider and more logical application to principles which had been enunciated by the sages of those earlier faiths of which his own was the offspring, while adding to them a spirit of greater earnestness and philanthropy. He held that ceremonial religion was worthless, that to every man was set the task of working out in this life his salvation from evil desires. In Buddhism abstract speculation is discouraged as profitless. When Gautama was asked whether the world was eternal or not eternal, he made no reply—a greater proof of wisdom than a vain attempt to unriddle an insoluble problem. The existence of the material world and its conscious inhabitants is accepted as an ultimate fact; everything in the world is in a state of constant though imperceptible change. "The unity of forces which constitutes a sentient being is sooner or later dissolved,"¹ and it is a mere delusion on the part of such a being to think that he is a separate and self-existent entity. To escape from this delusion and its consequent errors is the grand object of the Buddhist. When this has been completely accomplished, the individual has entered the state of Nirvāna. This conception, so strange to the European, so natural to the Buddhist, is defined by Professor Rhys Davids as "the extinction

¹ Rhys Davids's *Buddhism*, p. 88.

of that sinful, grasping condition of mind and heart which would otherwise, according to the great mystery of Karma, be the cause of renewed individual existence. That extinction is to be brought about by, and runs parallel with, the growth of the opposite condition of mind and heart ; and it is complete when that opposite condition is reached. Nirvāna is therefore the same thing as a sinless, calm state of mind ; and, if translated at all, may best, perhaps, be rendered 'holiness'—holiness, that is, in the Buddhist sense, *perfect peace, goodness, and wisdom.*¹

Practical ethics make up almost the whole of Gautama's veritable teaching. And this practical element is embodied in a more systematic form than is manifested by most other religions. Four leading truths have to be grasped :—

1. The existence of pain and sorrow.
2. The cause of pain is desire.
3. Sorrow and suffering cease by the extinction of desire, by *Nirvāna*.
4. Desire is extinguished by leading a virtuous and thoughtful life, the only path to *Nirvāna*.

This path is subdivided into eight branches :—

1. Right views on faith.
2. Right aims or judgment.
3. Right words.
4. Right behaviour or purpose.
5. Right practice or mode of livelihood.
6. Right exertion or obedience.
7. Right mindfulness or memory.
8. Right meditation.

There are four stages or paths through which the pious man passes in the practice of these virtues.

The first is the "entering upon the stream," or conversion, which follows on companionship with the good, the hearing of the law, enlightened reflection, and the practice of virtue. When a man has entered upon this path, he becomes free from the delusion of self, from doubt as to the Buddha and his doctrines, and from the belief in the efficacy of rites and ceremonies.

The second stage is that in which man has become free from the dominion of evil passions. If he has attained this, he will be among those who return only once to this world.

The third stage is that in which every vestige of sensuality and malevolence is destroyed. Such men return no more to this world.

The fourth stage is that of the "*Arahats*," the saintly beings who have become free from all desire for personal existence, either material or immaterial, free also from all pride, self-righteousness, and ignorance. When a man has reached this state,

He is free from all error; he sees and values all things in this life at their true value; evil desires of all kinds being rooted up from his mind, he only experiences right desires for himself, and tender pity and regard and exalted spiritual love for others.... Let him cultivate goodwill without measure towards the whole world—above, below, around—unstinted, unmixed with any feeling of differing or opposing interests. Let a man remain steadfastly in this state of mind all the while he is awake, whether he be standing, walking, sitting, or lying down (Rhys Davids, *Buddhism*, p. 109).

Such a man has attained Nirvāna in this life; no future re-births will be necessary; his warfare is accomplished, his salvation won.

It will be seen that Buddhism does not offer the direct appeal to selfishness that is found in religions which make the welfare of the individual soul a paramount necessity. The goal of salvation, according to Buddha, lies in the diminished activity, the practical extinction, of the individual identity; and the very purpose of his faith is to foster everything which contributes to this result. The reward of well-doing, therefore, is merely the negative reward of relief from the burden of existence, from the possibility of further struggle. With Europeans the notion that life is, on the whole, a good thing is so deeply ingrained that their only idea of reward lies in its continuance :—

"'Tis life whereof our nerves are scant,
(Oh life, not death, for which we pant."

¹ *Buddhism*, pp. 111-112.

With the Buddhist it is precisely the reverse ; life is a bad thing, and he is content to find his reward for virtue in the hope that life will come to an end. As the western conception of life colours all western ideas of religion, so does this pessimistic notion lie at the root of the Buddhist faith.

Whatever view we may hold as to the nature of the salvation set before the followers of Gautama, there can be no question as to the remarkable beauty and purity of his moral precepts. Without touching on the metaphysical system which has gathered round them, we content ourselves with a very brief glance at the ethics inculcated by this far-off Eastern teacher.

Gautama left behind him no written works, but his followers believe that his verbal teachings were learnt by heart during his lifetime by his immediate disciples, and faithfully handed down by memory until put into writing ; and there is no reason to doubt the substantial accuracy of the claim.

When asked to declare what was the chief good, Gautama is said to have replied to the following effect :—

“Not to serve the foolish,
But to serve the wise ;
To honour those worthy of honour :
This is the greatest blessing.

“To support father and mother,
To cherish wife and child,
To follow a peaceful calling :
This is the greatest blessing.

“To bestow alms and live righteously,
To give help to kindred,
Deeds which cannot be blamed :
These are the greatest blessing.

“To abhor and cease from sin,
Abstinence from strong drink,
Not to be weary in well-doing :
These are the greatest blessing.

“Reverence and lowliness,
Contentment and gratitude,
The hearing of the law at due seasons :
This is the greatest blessing.

“Self-restraint and purity,
The knowledge of the noble Truths,

The realisation of Nirvāna :
This is the greatest blessing.”

We proceed to give a few passages, necessarily isolated from their context, representing the best that is to be found in the Buddhist faith, but the value of which is not to be under-estimated because often mixed with imperfection and error :—

Never in this world does hatred cease by hatred ;
Hatred ceases by love, this is always its nature.

As rain breaks in upon an ill-thatched hut,
So passion breaks in upon the untrained mind.

Follow not after vanity, nor familiarity with the
delight of lust,
For the earnest and the thoughtful obtain ample
joy.

Not where others fail, or do, or leave undone ;
The wise should notice what himself has done or
left undone.

Like a beautiful flower, full of colour, without
scent,
The fine words of him who does not act accord-
ingly are fruitless.

Like a beautiful flower full of colour, and full of
scent,
The fine words of him who acts accordingly are
full of fruit.

As long as the sin bears no fruit,
The fool he thinks it honey ;
But when the sin ripens,
Then indeed he goes down in sorrow.

One may conquer a thousand thousand men in
battle,
But he who conquers himself alone is the
greatest victor.

Let no man think lightly of sin, saying in his
heart, “It cannot overtake me.”

As the waterpot fills by even drops of water
falling,
The fool gets full of sin, ever gathering little by
little.

Let a man make himself what he preaches to
others ;
The well-subdued may subdue others ; one's
self indeed is hard to tame.

He who formerly was heedless, and afterwards
becomes earnest,
Lights up this world, like the moon escaped
from a cloud.

He who holds back rising anger as a rolling
chariot,

Rhys Davids, *Buddhism*, ch. v.

Him indeed I call a driver : others only hold the reins.

Let a man overcome anger by kindness, evil by good ;

Let him conquer the stingy by a gift, the liar by truth.

Not by birth does one become low caste ;
Not by birth does one become a Brahman ;
By his actions alone one becomes low caste ;
By his actions alone one becomes a Brahman.¹

The thoughtless man, even if he can recite a large portion of the law, but is not a doer of it, has no share in the priesthood, but is like a cow-herd counting the cows of others.

Not in the sky, not in the midst of the sea, not if we enter into the clefts of the mountains, is there known a spot in the whole world where a man might be freed from an evil deed.

Bad deeds, and deeds hurtful to ourselves, are easy to do ; what is beneficial and good, that is very difficult to do.

Let us live happily, then, not hating those who hate us : among men who hate us let us dwell free from hatred.

The fault of others is easily perceived, but that of one's self is difficult to perceive ; a man winnows his neighbour's faults like chaff, but his own fault he hides, as a cheat hides the bad die from the gambler.

What ought to be done is neglected, what ought not to be done is done.

If anything is to be done, let a man do it ; let him attack it vigorously.

What is the use of plaited hair, O fool ; what of the raiment of goat skins ? Within thee there is ravening, but the outside thou makest clean.

Let the lay disciple not kill, nor cause to be killed, any living being, nor let him approve of others killing, after having refrained from hurting all creatures, both those that are strong and those that tremble in the world.

Then let him abstain from taking anything in any place that has not been given to him, knowing it to belong to another ; let him not cause anyone to take nor approve of those that take ; let him avoid all sort of theft.

Let the wise man avoid an unchaste life as a burning heap of coals ; not being able to live a life of chastity, let him not transgress with another man's wife.

Let no one speak falsely of another in the hall of justice or in the hall of assembly ; let him not cause anyone to speak falsely, nor approve of those that speak falsely ; let him avoid all sort of untruth.

Let the householder not give himself to intoxicating drinks ; let him not cause others to

drink, nor approve of those that drink, knowing it to end in madness.

Let a wise man with a believing mind, gladdening the assembly of the mendicants, with food and drink, make distributions according to his ability.

Let him dutifully maintain his parents, and practise an honourable trade ; the householder who observes this strenuously goes to the gods.²

Many of these passages bear considerable resemblance to parts of the New Testament, sometimes in idea, sometimes in the actual words used ; and numerous other parallels are to be traced. One of the most striking of these corresponds to the parable of the Prodigal Son. It is too long to quote here in full ; but the following is a condensed version of the story :—

A young man, seduced by bad company, left his father's home and wandered to a distant country. For many years the father searched for him ; while the son wandered from place to place begging food and clothing. At length he reached a splendid house, where he was intending to beg ; but, seized with fear, hurried away. The father knew of his arrival, and sent out men to bring him home. The frightened wanderer imagined they were about to slay him ; and the father, seeing his fear, did not reveal himself, but put the son to manual work, and lodged him in a small hotel near his own mansion. Gradually the consciousness of manhood was aroused in the breast of the degraded son, and after many years of slow improvement the father called a great gathering of friends and nobles, even the king himself, and formally acknowledged his son, and made over to him his whole property.

In several important respects there is a remarkable analogy between Buddhism and Christianity. In each case we find the same conception of righteousness, as depending, not upon ritual, but upon the purity of the inner life. We find righteousness announced as the noblest of human aspirations, taking precedence

¹ Rhys Davids, *Buddhism*, ch. v.

² Berry, *Christianity and Buddhism*, Appendix ii.

of all worldly aims and advantages. Sin also is not an external matter, but a growth from within; the most strenuous effort is required to overcome it, and its consequences are inevitable. So, too, the pleasures of the world are hollow and unsatisfying, delusive in their nature, uncertain in their duration. And, again, the path of duty is hard; but it is necessary to the higher development of character that it should be followed. Self-control, purity of heart, truth, goodwill to others, are necessary to the proper fulfilment of social duties; and, while keeping free from the snares of the world and of self, these social duties must not be neglected by laymen, but actively pursued.

An absorbing spirituality, an intensely earnest appreciation of the ethical factors of life, are marked features of Gautama's teaching. Buddhism is an exaltation of the mind. All physical forms, being composed of material elements, are subject to the law of dissolution. Sorrow, pain, decay, and death are the necessary results of man's bodily existence. Yet of a purely immaterial existence Buddhism knows nothing. "The way to be freed from doubt and heresy lies through freedom from impurity and revenge, and evil longings of all kinds."¹ If a man wishes to understand the real facts of life, he must "purify his mind from all unholy desires and passions; right actions spring from a pure mind, and to the pure in heart all things are open."² The great aim of the system is the spread of universal charity: "True enlightenment and true freedom are complete only in love. Self-conquest and universal charity are the foundation thoughts of Buddhism."³ According to Buddhism, "There is no magic in any outward act; every one's salvation consists of and depends entirely on a modification and growth in his own inner nature, to be brought about by his own self-control and diligence."⁴

The characteristics of self-reliance, personal independence, and individual

effort are brought out more strongly in Buddhism than perhaps in any other religion. The doctrine that man is, in the moral sense, the architect of his own fate, that his happiness will be in proportion to his deserts, cannot be objected to on the score of unfairness. It is precisely the disbelief in supernatural aid which throws upon man the onus of working out his own salvation. It does not involve faith in the paradox that the effort is, after all, not his own, but that of a higher power controlling both the will and the actions. And the salvation is not thought to be a mere escape from horrible punishment; it is put on the higher plane of release from the dominion of sin and progressive growth in goodness—a doctrine which even Christianity has been sadly slow to instil into its devotees.

It is proper to point out that the Buddhist system inculcates one code for men in general, who continue to mingle freely with their fellows, and another for the "mendicants," or those who have embraced an exclusively religious life. Of the following ten moral precepts five are of universal obligation—viz., not to kill, not to steal, not to commit adultery, not to lie, not to be drunken. Those who have become "mendicants" in the hope of more speedily attaining Nirvana are recommended to obey the following rules, in addition: to abstain from food after midday; to abstain from dances, theatrical representations, songs, and music; to abstain from personal ornaments and perfumes; to abstain from a lofty and luxurious couch; to abstain from the use of gold and silver. The regular ascetics or monks obey a number of severe restrictions: to dress in rags, to beg their simple food, which must not exceed one meal a day, to live in the forests, except during the rainy season, with no shelter but the trees, and not to lie down even for sleep.⁵

As a corollary from its non-theistic basis, Buddhism dispenses with prayer.

¹ *Encyclopædia Britannica*, art. "Buddhism."

² *Ibid.* ³ *Ibid.* ⁴ Rhys Davids's *Buddhism*.

Rhys Davids's *Buddhism*, ch. vi.

In view of the degree to which in many other religions, prayer has been abused and debased by being employed mainly with the idea of procuring material blessings, and even unwarrantable forms of personal satisfaction, such as vengeance upon enemies, it is no discredit to Gautama that he should have discountenanced supplication to a superior power, whose very existence appeared doubtful. Various forms of meditation, however, were prescribed, which at dawn and at the close of day were to uplift and purify the mind. If the chief value of prayer is as a spiritual exercise, little distinction can be drawn between actual petition and such meditations as the wish that all men might be free from sorrow, pain, and evil desire; that enmity must be laid aside; that an enemy is to be thought of according to the good there is in him; and that, if no other plan avails, gifts are to be offered to overcome his anger. "The giving of alms," it is said, "is a blessing to him who receives as well as to him who gives; but the receiver is inferior to the giver." Another meditation enjoins compassion to the poor; the third, a joyful spirit; the fourth, the impurity and unreality of the body; and the fifth and highest, that equanimity of mind when "all sentient beings are regarded alike, one is not loved more than another, nor hated more than another; towards all there is indifference."¹

Just before his death Gautama called his disciples together, and solemnly enjoined them to practise the following means to virtue, out of pity for the world and for the good and happiness of men:—

- (i.) The four earnest meditations—viz. :
 - On the impurity of the body.
 - On the evils which arise from sensation.
 - On the impermanence of ideas.
 - On the conditions of existence.
- (ii.) The four great efforts—viz. :
 - To prevent bad qualities from arising.
 - To put away bad qualities which have arisen.

- To produce goodness not previously existing.
- To increase goodness when it does exist.
- (iii.) The four means by which saintship is acquired—viz. :
 - The will to acquire it.
 - The necessary exertion.
 - The necessary preparation of the heart.
 - Investigation.
- (iv.) Cultivation of the five moral powers of Faith, Energy, Recollection, Contemplation, and Intuition.
- (v.) The seven kinds of Wisdom, which are
 - Energy.
 - Recollection.
 - Contemplation.
 - Investigation of Scripture.
 - Joy.
 - Repose.
 - Serenity.

Suppression of the natural emotions, indifference to the ordinary experiences of life, is thus set forth as the highest ideal and the highest attainment of virtue—a view which, if it removes the sting of pain and sorrow, takes away at the same time that which to us constitutes the truest happiness, banishes joy and sympathy, and reduces life to a mechanism.

This passionless indifference is the main object of the Buddhist religious life, and before it is condemned as a serious flaw in an otherwise beautiful system, due weight should be given to those sad features of human life which, to the mind of Gautama, compelled the adoption of such an attitude as the only way of escape from pain. Logically, suicide might be thought the simplest means of effecting this escape. Buddhism, however, discourages suicide on the ground that duty requires the sentinel not to give up his post, and that the truly pious man has no desire to die. One of the Buddha's disciples is reported to have said: "I am like a servant awaiting the command of his master, ready to obey it, whatever it may be; I await the appointed time for the cessation of existence; I have no wish to live; I have no wish to die; desire is extinct."

A recognition of the fact that the system of caste is based upon distinctions

¹ Spence Hardy, *Eastern Monachism*.

which for the truly religious do not exist, and a broad spirit of toleration for those holding other creeds, are features in Buddhism not only worthy of high admiration from a moral point of view, but carrying with them consequences of great practical importance. The Buddhist king, Asoka, who lived in the third century before the Christian era, caused many inscriptions to be engraved on rocks and pillars in various parts of his empire, and these edicts expressly state his wish that those who differ from him in creed may also attain eternal salvation. The following epitome of religion contained in one of his inscriptions has probably never been surpassed for comprehensive terseness: "This is the true religious devotion, this the sum of religious instruction, that it should increase the mercy and charity, the truth and purity, the kindness and honesty, of the world."

We know that within a few centuries after Gautama's death Buddhism sadly degenerated, that its ethical purity became overlaid with belief in evil spirits, in hells surpassing in horror the imaginings of Dante, and that the machine-made devotions of which the "praying-wheels" of Tibet are an example superseded the manly spirit of self-control. In the time of Asoka, however, Buddhism was still comparatively pure. Rhys Davids, referring to these most valuable inscriptions, says: "We hear nothing of metaphysical beings or hypothetical deities, nothing of ritual, or ceremonies, or charms; the edicts are full of a lofty spirit of tolerance and righteousness. Obedience to parents; kindness to children and friends; mercy towards the brute creation; indulgence to inferiors; reverence towards Brahmins and members of the order; suppression of anger, passion, cruelty, or extravagance; generosity, and tolerance, and charity—such are the lessons which the 'kindly king, the delight of the gods,' inculcates on all his subjects."¹ Asoka was a

missionary king; he sent embassies to the Greeks, from whom he claimed to have won a victory, "not by the sword, but by religion." The edicts also state that he established "hospitals for man and beast, planted medicinal plants and fruit-bearing trees where such did not naturally grow, and dug wells and planted trees on the roadsides for the use of man and beasts," and appointed ministers to see to the right treatment of subject races.² The government of this Buddhist emperor is stated in the *Encyclopædia Britannica* to have been the most enlightened and philanthropic that India has ever known.

A distinguishing feature of Buddhism is its tenderness to animal life. Observing the cruel slaughter involved in the temple sacrifices, Gautama is reported to have said:—

Ignorance only can make these men prepare festivals and vast meetings for sacrifices. Far better to revere the truth than try to appease the gods by the shedding of blood.

What love can a man possess who believes that the destruction of life will atone for evil deeds? Can a new wrong expiate old wrongs? And can the slaughter of an innocent victim take away the sins of mankind? This is practising religion by the neglect of moral conduct.

Purify your hearts and cease to kill; that is true religion.³

The following sentences closely resemble some of the teachings of Paul, the Christian Apostle:—

Be like unto brothers; one in love, one in holiness, and one in your zeal for the truth.

Spread the truth and preach the doctrine in all quarters of the world, so that in the end all living creatures will be citizens of the kingdom of righteousness.⁴

Moral and intellectual elevation unite in the texts which declare that

A man that dwells in lonely woods and yet covets worldly vanities is a worldling, while the man in worldly garments may let his heart soar high to heavenly thoughts.⁵

Happy is he who has overcome all selfishness; happy is he who has attained peace; happy is he who has found the truth.

¹ *Buddhism*, pp. 228-9.

² Carus, *The Gospel of Buddha*, pp. 26-7.

³ *Ibid.*, p. 43.

⁴ *Ibid.*, p. 46.

⁵ *Buddhism*, pp. 223-4.

The truth is noble and sweet; the truth can deliver you from evil. There is no saviour in the world except the truth.¹

Personal effort and self-reliance are encouraged :—

Whatever men do, whether they remain in the world as artisans, merchants, and officers of the king, or retire from the world and devote themselves to a life of religious meditation, let them put their whole heart into their task; let them be diligent and energetic; and if they are like the lotus, which, although it grows in the water, yet remains untouched by the water, if they struggle in life without cherishing envy or hatred, if they live in the world not a life of self, but a life of truth, then surely joy, peace, and bliss will dwell in their minds.²

Since it is impossible to escape the result of our deeds, let us practise good works.

Let us inspect our thoughts that we do no evil, for as we sow so shall we reap.³

By oneself evil is done; by oneself one suffers; by oneself evil is left undone; by oneself one is purified. Purity and impurity belong to oneself; no one can purify another.⁴

If a man hold himself dear, let him watch himself carefully; let each man direct himself first to what is proper, then let him teach others.Self is the lord of self; who else could be the lord? (*Dhammapala*.)

Do not follow the evil law. Do not live on in thoughtlessness. Do not follow false doctrine. Be not a friend of the world. Rouse thyself; do not be idle. Follow the law of virtue. Do not follow that of sin.....He whose evil deeds are covered by good deeds brightens up this world like the moon when freed from clouds.....Beware of bodily anger, of the anger of the tongue, of the anger of the mind. Leave the sins of the mind and practise virtue with thy mind. (*Ibid.*)

Make thyself an island; work hard; be wise. Let a wise man blow off the impurities of himself as a smith blows off the impurities of silver—one by one, little by little, and from time to time.....There is no fire like passion; there is no shark like hatred; there is no snare like folly; there is no torrent like greed. (*Ibid.*)

Another passage from this volume conveys the same idea as one of the parables of Jesus :—

"Here I shall dwell in the rain, here in winter and summer." Thus the fool meditates, and does not think of death. Death comes and carries off that man, honoured for his children and flocks, his mind distracted, as a flood carries off a sleeping village.

The book called the *Mahāvagga* contains a few excellent precepts :—

Do not ask about descent, but ask about conduct.

Whoever, being innocent, endures reproach, blows, and bonds, the man who is strong in his endurance, him I call a Brahmana.....The man who has a profound understanding, who is wise, who knows the true way and the wrong way, who has attained the highest good, him I call a Brahmana. The man who is stainless, like the moon, pure, serene, and undisturbed, who has destroyed joy, him I call a Brahmana.

From the *Book of the Great Decease* we gather one or two ethical blossoms :—

Be ye a refuge to yourselves. Betake yourselves to no external refuge. Hold fast to the truth as a lamp. Hold fast as a refuge to the truth. Look not for refuge to anyone but yourselves.

Work out your salvation with diligence.

To him who gives shall virtue be increased.

In him who curbs himself no anger can arise.

The righteous man cast off all sinfulness,

And by the rooting out of lust and bitterness

And all delusion doth to Nirvana reach.

The following passages are from the *Dhammapala*, one of the best-known canonical books of the Buddhists :—

Pleasant is virtue lasting to old age; pleasant is a faith firmly rooted; pleasant is contentment with intelligence; pleasant is avoiding of sins.

They who see sin where there is no sin, and see no sin where there is sin, such men, embracing false doctrines, enter the evil path.

Good people shine from afar, like the snowy mountains; bad people are not seen, like arrows shot by night.

Whoever exalts himself and despises others, being men, by his pride let one know him as an outcast. (*Uragavagga*, ch. vii.)

Uneasy go the small waters, silent goes the vast ocean. What is deficient, that makes a noise; what is full, that is calm; the fool is like a half-filled water-pot, the wise is like a full pool. (*Mahavagga*, ch. xi.)

Those whose wishes are their motives, those who are linked to the pleasures of the world, they are difficult to liberate, for they cannot be liberated by others. (*Attakavagga*, ch. ii.)

As a drop of water does not stick to a lotus, so a disciple does not cling to anything that is seen or heard or thought. (*Ibid.*, c. i. vi.)

Free as the air is the life of him who has renounced all world'y things. (*Teviggā Sutta*, ch. i.)

Just as a mighty trumpeter makes himself heard—and that without difficulty—in all the four directions, even so, of all things that have

¹ Carus, *The Gospel of Buddha*, p. 42.

² *Ibid.*, p. 62. ³ *Ibid.*, p. 74. ⁴ *Ibid.*, p. 111.

shape or life, there is not one that the enlightened man passes by or leaves aside, but regards them all with mind set free and deep-felt love and pity, sympathy and equanimity. (*Ibid.*, ch. iii.)

The various Suttas or scriptures of the Buddhists contain a vast number of exhortations and aids to the virtuous life, many of the highest ethical value, particularly as they dwell with great persistence on that need of personal effort and self-culture which the Christian is systematically taught to under-value, many others dealing with customs of a ceremonial and local character. Stripped of a few of those repetitions which were doubtless intended as helps to the memory, the following is a noble passage :—

If a man should desire that he should be victorious over spiritual danger and dismay, that neither danger nor dismay should ever overcome him; should desire to comprehend by his own heart the hearts of other beings and of other men; to discern the passionate mind to be passionate and the calm mind calm; the angry mind to be angry and the peaceable mind peaceable; the deluded mind to be deluded and the wise mind wise; the concentrated thoughts to be concentrated and the scattered to be scattered; the lofty mind to be lofty and the narrow mind narrow; the sublime thoughts to be sublime and the mean to be mean; the steadfast mind to be steadfast and the wavering to be wavering; the free mind to be free and the enslaved mind to be enslaved—let him then fulfil all righteousness; let him be devoted to that quietude of heart which springs from within; let him not drive back the ecstasy of contemplation: let him look through things; let him be much alone. (*Akanheyya Sutta*, sec. viii.)

Another of these scriptures defines as follows the ten forms of bondage or delusion which man has to overcome in his efforts towards moral purity :—

The delusion of self; doubt; reliance on the efficacy of rites and ceremonies; the bodily lusts or passions; hatred and ill-feeling; desire for a future life in the worlds of form; desire for a future life in the formless worlds; pride; self-righteousness; ignorance.

The second, third, and fifth of these are stated by Professor Rhys Davids to be "in effect but a new way of stating the fundamental Buddhist doctrine that good must be pursued without any

ulterior motive; and that that man is not spiritually free in whom there is still the least hankering after any future life beyond the grave." (Introduction to *Ketokhila Sutta*; *Sacred Books of the East*, vol. ii.)

The needless verbal repetitions of the next extract have been expunged :—

A disciple wisely reflecting, when there has sprung up within him a lustful thought that he endureth not, he puts it away, he destroys it, he makes it not to be; when there has sprung up within him an angry thought, a malicious thought, some sinful, wrong disposition that he endureth not, he puts it away, he destroys it, he makes it not to be..... He cultivates that part of the higher wisdom called Mindfulness, that called Search after Truth, that called Energy, that called Joy, that called Peace, that called Earnest Contemplation, that called Equanimity, each dependent on seclusion, dependent on passionlessness, dependent on the utter ecstasy of contemplation, resulting in the passing-off of thoughtlessness. (*Sabbāsava-Sutta*.)

The Buddhist conception of sin is not lacking in earnestness, though without the vivid intensity of feeling which prompted the anguished cry of Paul :—

An evil deed is better left undone, for a man will repent of it afterwards; a good deed is better done, for having done it one will not repent.

If a man speaks or acts with an evil thought, pain follows him as the wheel follows the foot of the ox that draws the carriage.

If a man commits a sin, let him not do it again; let him not delight in sin; pain is the outcome of evil. If a man does what is good, let him do it again; let him delight in it; happiness is the outcome of good.¹

The following text recalls the impassioned words of the Hebrew Psalmist :—

The gift of religion exceeds all gifts; the sweetness of religion exceeds all sweetness; the delight in religion exceeds all delights.²

Again, we have a similarity to a well-known Christian text :—

A treasure that is laid up in a deep pit profits nothing, and may easily be lost. The real treasure that is laid up through charity and piety, temperance, self-control, or deeds of merit, is hid secure, and cannot pass away. It is never gained by despoiling or wronging others, and no thief can steal it. A man when he dies must leave the fleeting wealth of the world, but this treasure of virtuous acts he takes with him.³

¹ Carus, *The Gospel of Buddha*, p. 113.

² *Ibid.*, p. 116.

³ *Ibid.*, p. 149.

The Buddhists themselves look upon the following verse as a solemn summary of their master's teaching:—

Not to commit any sin; to do good, and to purify one's mind: this is the teaching of all the awakened.¹

A short dialogue concerning the gentler sex is not without a spice of amusement. Gautama was asked by his favourite disciple Ananda:—

How are we to conduct ourselves, Lord, with regard to womankind?

Do not see them.

But if we should see them, what are we to do?

Abstain from speech.

But if they should speak to us, Lord, what have we to do?

Keep wide awake.²

With respect to the soul, Buddhism denies its independent existence, and regards it as practically the sum of a man's deeds. "Only through ignorance and delusion," said the Enlightened One, "do men indulge in the dream that their souls are separate and self-existent entities."³ The ego is destroyed by death; what survives is the *Karma*, the aggregate of acts and their results. According to Dr. Carus, Buddha "does not deny man's mentality, his spiritual constitution, the importance of his personality—in a word, his soul. But he does deny that mysterious ego-entity, a kind of soul-monad, which by some schools was supposed to reside behind or within man's bodily and psychical activity as a distinct being..... But while there is no ego-entity, the very being of man consists in his Karma, and his Karma remains untouched by death, and continues to live. Thus, by denying the existence of that which appears to be our soul, and for the destruction of which in death we tremble, Buddha actually opens (as he expresses it himself) the door of immortality to mankind; and here lies the cornerstone of his ethics, and also of the comfort as well

as the enthusiasm which his religion imparts. Anyone who does not see the positive aspect of Buddhism will be unable to understand how it could exercise such a powerful influence upon millions and millions of people."⁴

It is only fair to add that, with regard to the nature of this "positive aspect of Buddhism," there appear to be considerable differences of opinion. The term "Nirvāna" is the central point of the discussion, some scholars holding that it means the extinction of evil desires in the present life; others holding that it means absolute annihilation. The latter view seems to fall in better with the essential Buddhist theory that existence is itself an evil. In section 53 of his *Gospel of Buddha*, Dr. Carus gives an interesting discussion between Gautama and a Brahmin priest on the subject of the continuance of personal identity, and probably most European readers would consider Buddha's teachings somewhat unconvincing. His object appears to be to crush and destroy the feeling of self. To our minds, this is fatal to all thought, energy, and progress. "Self" is not a thing to be crushed out of existence, but a thing to be rationally moulded and developed.

On this point Buddhism is not consistent. The simplest way to destroy the feeling of self would be to practise all that would lessen life, both social and individual. But the noble morality of Gautama distinctly promotes and increases the quantity of life. The fact that righteousness tends not to extinction of self, but to its orderly and happy development, does not seem to have occurred to the great founder of Buddhism. No Buddhist could deny that its remarkable tenderness to animals helps to prolong their lives, and the same principle applies to human life. Consideration for others, the refraining from acts which diminish their happiness, clearly tend to promote life, and not to

¹ Rev. T. S. Berry, *Christianity and Buddhism*, p. 106.

² *Book of the Great Decease*, ch. v.

³ Carus, *The Gospel of Buddha*, p. 132.

⁴ Carus, *The Gospel of Buddha*, preface, pp. vi.-vii.

lessen either its quantity or its happiness.

It is equally difficult for the European reader to gather the precise meaning of the term "karma." The doctrine of karma is a development of the theory of the transmigration of souls, which formed a prominent part of the ancient Brahminism that Gautama partially reformed. According to Professor Rhys Davids, "this is the doctrine, that as soon as a sentient being (man, animal, or angel) dies a new being is produced in a more or less painful and material state of existence, according to the 'karma,' the desert or merit, of the being who had died."¹ "Buddhism is convinced that if a man reaps sorrow, disappointment, pain, he himself, and no other, must at some time have sown folly, error, sin; and, if not in this life, then in some former birth. Where, then, in the latter case, is the identity between him who sows and him who reaps? *In that which alone remains* when a man dies, and the constituent parts of the sentient being are dissolved; in the result, namely, of his action, speech, and thought, in his good or evil *karma* (literally his 'doing') which does not die."² We are familiar with the idea that all human activities produce their inevitable results, but we undoubtedly find great difficulty in understanding how the results of actions can be concentrated "in the formation of one new sentient being—new, that is, in its constituent parts, but the same in its essence, its being, its doing, its *karma*."³ The true Buddhist saint, says the same author, "does not mar the purity of his self-denial by lusting after a positive happiness which he himself shall enjoy hereafter. His consciousness will cease to feel, but his virtue will live and work out its full effect in the decrease of the sum of the misery of sentient beings."⁴

Unsatisfactory though this theory may

be to us, there is a certain truth underlying it. Gautama looked upon actions as being like seeds: "men were found, to some extent, to reap the consequences of their actions during their lifetime, but this takes place only in a limited and incomplete sense, during the existence to which the actions belong. At the close of a life many acts remain like seed sown, but not yet grown up. Hence the theory that when a man dies he leaves the sum-total of the acts of his life as a kind of complex seed, made up of good and bad elements, which, by his death, springs up into a fresh existence, the same, and yet not the same; in somewhat of the sense in which it might be said that ordinary seed which springs up is identical, and yet not identical, with that which is sown. Viewed in this light, the theory loses its apparent absurdity. It becomes, in fact, a mode of expressing partly what we understand by the law of heredity, which involves a transference of character, and a reproduction of the consequences of actions; and partly the law of retribution, that 'whatsoever a man soweth that shall he also reap.'"⁵ "The sum-total of the actions of an individual during his lifetime constitute the karma. When a man dies the elements of his being perish, but by the force of his karma a new set of elements instantly start into existence, and a new being appears in another world, who, though possessing a different form and different elements of being, is in reality identical with the man just passed away, because his karma is the same. It is the link that preserves the identity of a being through all the countless changes which he undergoes."⁶

This is a highly speculative and unverifiable doctrine. Plain and obvious though it may be to the Buddhist, to the European it seems as mist gilded by the morning sunshine. It is clear that the point on which proof is most needed—*i.e.*, the continuance of personal identity

¹ Professor T. W. Rhys Davids, *Buddhism*, p. 101.

² *Ibid.*, p. 103.

⁴ *Ibid.*, p. 104.

³ *Ibid.*, p. 104.

⁵ Berry, *Christianity and Buddhism*, p. 77.

⁶ *Ibid.*, p. 76.

—is merely assumed. The theory is elucidated with great wealth of unconvincing illustration in *The Questions of King Milinda*, a work dating from the first century before the Christian era, and in which the philosophical aspect of Buddhism is discussed with marked ability.

In addition to the moral principles at which we have already glanced, Buddhism provides a brief code regulating the conduct of social relations in accordance with the dictates of natural ethics. As this code is comparatively short, we append it in full :—

1.—Parents and Children.

Parents should—

1. Restrain their children from vice.
2. Train them in virtue.
3. Have them taught arts and sciences.
4. Provide them with suitable wives or husbands.
5. Give them their inheritance.

The child should say—

1. I will support them who supported me.
2. I will perform family duties incumbent on them.
3. I will guard their property.
4. I will make myself worthy to be their heir.
5. When they are gone I will honour their memory.

2.—Pupils and Teachers.

The pupil should honour his teachers :—

1. By rising in their presence.
2. By ministering to them.
3. By obeying them.
4. By supplying their wants.
5. By attention to instruction.

The teacher should show his affection to his pupils :—

1. By training them in all that is good.
2. By teaching them to hold knowledge fast.
3. By instruction in science and lore.
4. By speaking well of them to their friends and companions.
5. By guarding them from danger.

3.—Husband and Wife.

The husband should cherish his wife :—

1. By treating her with respect.
2. By treating her with kindness.
3. By being faithful to her.
4. By causing her to be honoured by others.
5. By giving her suitable ornaments and clothes.

The wife should show her affection for her husband :—

1. She orders her household aright.
2. She is hospitable to kinsmen and friends.
3. She is a chaste wife.
4. She is a thrifty housekeeper.
5. She shows skill and diligence in all she has to do.

4.—Friends and Companions.

The honourable man should minister to his friends :—

1. By giving presents.
2. By courteous speech.
3. By promoting their interest.
4. By doing to them as he would be done by.
5. By sharing with them his prosperity.

They should show their attachment to him :—

1. By watching over him when he is off his guard.
2. By guarding his property when he is careless.
3. By offering to him a refuge in danger.
4. By adhering to him in misfortune.
5. By showing kindness to his family.

5.—Masters and Servants.

The master should provide for the welfare of his dependents :—

1. By apportioning work to them according to their strength.
2. By supplying suitable food and wages.
3. By tending them in sickness.
4. By sharing with them unusual delicacies.
5. By now and then granting them holidays.

They should show their attachment to him as follows :—

1. They rise before him.
2. They retire later to rest.
3. They are content with what is given them.
4. They work cheerfully and thoroughly.
5. They speak well of him.

6.—Laymen and those Devoted to Religion.

The honourable man ministers to mendicants and Brahmins :—

1. By affection in act.
2. By affection in words.
3. By affection in thoughts.
4. By giving them a ready welcome.
5. By supplying their temporal wants.

They should show their affection to him ;—

1. By dissuading him from vice.
2. By exhorting him to virtue.
3. By feeling kindly towards him.
4. By instructing him in religion.
5. By clearing up his doubts.
6. By pointing the way to heaven¹

¹ Rhys Davids, *Buddhism*, pp. 144-7.

Many of these rules evince a thoughtful consideration for others in comparative trifles which could spring only from very high moral conceptions, and which the robust individuality of the Western world is apt to ignore. Surely the mysterious East, that fertile mother of religions, has given us in Buddhism a true revelation, since it makes known to us the moral beauty and purity that lie in the depths of human nature, needing no other divinity than that which abides in the human heart to awaken them into living glory.

It has now been made abundantly clear that the moral conceptions of Buddhism, although intermixed with a great deal of counsel which to us appears worthless, afford a valuable supplement to our own current ideas of righteousness, and comprise many ethical features at least equal and occasionally superior

in practical value to anything which has been developed by the religious aspirations of Christian civilisation.

Though legend has played its part in the formation of the Buddhist faith, its ethical sweetness was in the main derived from Gautama himself. Probably no more beautiful, gentle, and spotless character has ever existed among the sons of men. Sir Edwin Arnold has said: "Discordant in frequent particulars, and sorely overlaid by corruptions, inventions, and misconceptions, the Buddhistical books yet agree in the one point of recording nothing—no single act or word—which mars the perfect purity and tenderness of this Indian teacher, who united the truest princely qualities with the intellect of a sage and the passionate devotion of a martyr."¹

¹ *Light of Asia*, Preface, p. viii.

CONFUCIANISM AND TAOISM

I.—Confucianism.

THE majority of us have but the vaguest ideas of who Confucius was, when he lived, and what he did. Yet we may glean many fragments of truth from this ancient Chinese teacher. He was one who, like Buddha, dismissed from thought all theories of a personal God, all expectations of the soul's immortality. Western writers often confidently assure us that without these two "essentials" of religion the moralist cannot hope to exert any permanent influence. Yet the remarkable veneration in which the great secular teachers of the East are to this day held by the larger half of mankind is proof that the strenuous claims of the secular life do in reality predominate over the unsubstantial visions of a possible future.

Confucius was born within a few years of Buddha in that sixth century before the Christian era which witnessed so mightily an awakening of religious thought and activity. China was then a collection of petty States, governed on a sort of feudal basis by kings or dukes, and generally at war with one another. Civilisation had made considerable progress, but the despotism and rapacity of the rulers and nobles hindered its diffusion. Justice was rare, moral claims were lost sight of, and neither social nor political stability existed. It was the aim of Confucius to revive the ancient usages, beliefs, and institutions which had rendered glorious the reigns of several of the early Chinese kings. The philosopher's experiences, however, were discouraging in the extreme. He wandered from one court to another, proffering his

services as adviser, minister, or magistrate, occasionally tasting the doubtful sweets of office, but more frequently neglected and unheeded—a voice crying in the wilderness. A few faithful disciples clung to him till the last, when, in poverty and sorrow, he died in the year 478 B.C.

Confucius had great faith in his own capabilities. He believed that he could regenerate a State in three years, but an ungrateful country never gave him the opportunity. He was above all a political moralist, who looked to the past as the golden age of China, and believed that a return to the simple virtues of their ancestors was all that was needed to make the people prosperous and happy. Their welfare was the object that governed all his endeavours; it was for the people that he thought, travelled, and laboured. His limited but intensely conscientious mind attached a disproportionate weight to the due performance of rites, though in defence of his attitude it must be borne in mind that in the case of a people who believe in ceremonies, and with difficulty grasp truths, outward forms are the only means by which ethical ideas can be conveyed. To Confucius observances were valuable as affording the best means of guaranteeing conduct.

The actual moral teaching of Confucius exhibits very little originality. His main literary work was the collecting and editing of the books on history, poetry, and morals, which had long existed in his time. These ancient books comprise :—

1. The *Yi-King*¹ (or Sacred Book of Changes).
2. The *Shu-King* (or Book of History).
3. The *Shi-King* (or Book of Poetry).
4. The *Li-Ki* (or Book of Rites).

The only work of which Confucius was the sole author was of an historical character, being a continuation of the *Shu-King*, and entitled *Spring and Autumn Annals*. Most of his ethical

teaching was delivered by word of mouth, and this, by the care of his disciples, has been preserved in three small volumes, which, with a fourth, form what are known as the Four Classics or Sacred Books. They are respectively—

1. The *Ta hëo*, or Great Learning.
2. The *Chung yung*, or Doctrine of the Mean.
3. The *Lun yü*, or Confucian Analects.
4. The *Mäng tsze*, or Works of Mencius, the most eminent of the followers of Confucius.

In spite of its limitations, the ethical quality of the work of Confucius is undoubtedly high. We find, of course, an excessive reverence for the past; filial piety is carried to a degree unknown to Western nations; and many of the rites enjoined appeared to us to be not merely superstitious, but obviously foolish. Yet the soul of his teaching is moral goodness, and this is so aided and broadened by the inculcation of right reason as to greatly increase its practical usefulness. From a passage in the *Shu King* it would appear that conceptions in which the claims of head and heart were happily united were known from a very early period, though, as this work was compiled by Confucius, we cannot be sure that the words in question are not his own. A minister of the great king Shun (who reigned more than 2,000 years B.C.), being asked what were the nine virtues, replied :—

Affability combined with dignity; mildness combined with firmness; bluntness combined with respectfulness; aptness for government combined with reverence; docility combined with boldness; straightforwardness combined with gentleness; easiness combined with discrimination; vigour combined with sincerity; and valour combined with righteousness.¹

This is far from being a simple classification of morals, and we may well feel the improbability that such a remote age could be in a position to represent each virtue as being a compound of other virtues; even if Confucius be the author

¹ The word "king" means "book."

¹ *Confucianism and Taoism*, Professor R. K. Douglas, p. 13.

of the passage, it must be admitted to indicate a comparatively advanced stage of both individual intelligence and social organisation.

Confucius held office as Minister of Crime in one of the small Chinese States, but not for a sufficiently long time to admit of his theories being fairly put into practice. He believed that, if given a free hand, he would "effect something considerable in twelve months, and in three years the government would be perfected," and crime virtually abolished. But jealousy, selfishness, and treachery undid his work. He held up too high a standard to suit the debauched tastes of the time. With a pride which did him credit, he gave up his post when a rival ruler sent eighty dancing girls as a present to his master in the hopes of destroying his influence. The trick was successful: the philosopher was no match for the dancers.

His reverence for forms and ceremonial, his scrupulous observance of the details of Chinese etiquette, did not blind him to the perception of the real meaning, the essentially practical nature, of right conduct. Nor did the stress laid on filial piety cause him to overlook the obligations on parents to bring up their children worthily. On one occasion, when a father brought an accusation against his son, Confucius cast both into prison, and, in reply to remonstrances, is said to have uttered the following homily:

Am I to punish for a breach of filial piety one who has never been taught to be filially-minded? Is not he who neglects to teach his son his duties equally guilty with the son who fails in them? Crime is not inherent in human nature, and therefore the father in the family and the Government in the State are responsible for the crimes committed against filial piety and the public laws. If a king is careless about publishing laws, and then peremptorily punishes in accordance with the strict letter of them, he acts the part of a swindler; if he collects the taxes arbitrarily, without giving warning, he is guilty of oppression; and if he puts the people to death without having instructed them, he commits a cruelty.¹

Confucius placed an excessive faith in human nature and in the influence of example. "What do you say," he was asked by a chief, "to killing the unprincipled for the good of the principled?" "Sir," replied Confucius, "in carrying on your government why should you employ capital punishment at all? Let your evinced desires be for what is good, and the people will be good." Just as the nature of gold is hardness, and the nature of fire is heat, he held that the nature of man is benevolence, righteousness, propriety, wisdom, and faithfulness.² Everything around him gave the lie to this view, but he never relaxed his faith in human goodness.

Confucius was once asked if there was one word which might serve as a rule of practice for all one's life. With remarkable penetration he replied: "Is not reciprocity such a word? What you do not want done to yourself do not do to others." He gave this aphorism a more positive form when he said:—

In the way of the superior man there are four things, to none of which have I as yet attained: To serve my father as I would require my son to serve me; to serve my prince as I would require my minister to serve me; to serve my elder brother as I would require my younger brother to serve me; and to offer first to friends what one requires of them.³

It is worthy of notice that the virtues upon which Confucius lays most emphasis are, not merely outward observances, but some of the primary and most natural dictates of the human heart. Faithfulness he ranks as the foundation of conduct, and as necessary to truly virtuous behaviour as a boat is to a man wishing to cross a river. "Hold faithfulness and sincerity as first principles,"³ said he. "I do not know how a man is to get on without faithfulness."⁴ The earnestness with which he insisted over and over again on this requirement shows that his system was not so devoid

¹ Douglas, p. 70.

² *Chung Yung*, xiii. 4, Douglas, p. 103.

³ *Lun Yu*, ix. 24, *ibid*, p. 114.

⁴ *Li Ki*, ii. 22, *ibid*.

of the spiritual element as is often supposed.

Confucianism is a purely secular system, and its lack of transcendental motives, while probably rendering it better adapted to the requirements of the Chinese race, will doubtless appear to the European to stamp it as unlikely to originate and foster the highest type of character. Prudential motives, the avoidance of extremes, the cultivation of the "mean" that lies between what we understand by sin on the one hand and holiness on the other—in fact, what might be termed a "split-the-difference" kind of morality—differentiates Confucianism from other ethical systems. In spite, however, of this prevailing characteristic, much of its ethical teaching is pure, wise, and noble, sometimes remarkable for its shrewd and penetrating observation. The sacred books of China make no claim to be considered inspired documents. Its wisdom is content to own its human origin, and makes no vain efforts to scale the heights of the divine.

From the *Shu King*, or Book of Historical Documents, a few sheaves of thought may be gleaned, such as these. Referring to methods of Government, Yü, a great sage of remote antiquity, gave to a prince the following counsel :—

Be cautious. Do not fail to observe the laws and ordinances. Do not find your enjoyment in idleness. Do not go to excess in pleasure. In your employment of men of worth, let none come between you and them. Put away evil without hesitation. Do not carry out plans of the wisdom of which you have doubts. Study that all your purposes may be with the light of reason. Do not go against what is right to get the praise of the people. Do not oppose the people's wishes to follow your own desires. (*Sacred Books of China*, vol. i., p. 47.)

As early as the eighteenth century B.C. a minister is recorded to have uttered this enlightened sentiment :—

There is no invariable model of virtue ; a supreme regard to what is good gives the model of it. There is no invariable characteristic of what is good that is to be supremely regarded ; it is found where there is a conformity to the uniform conscience. (*Ibid*, p. 102.)

Early and late, never be but earnest. If you

do not attend jealously to your small actions, the result will be to affect your virtue in great matters. (*Ibid*, p. 151.)

A small man thinks that small acts of goodness are of no benefit, and does not do them ; and that small deeds of evil do no harm, and does not abstain from them. (*Li King*, Appendix, iii, 38.)

Virtue small and office high ; wisdom small and plans great ; strength small and burden heavy : where such conditions exist, it is seldom that they do not end in evil. (*Ibid*, p. 40.)

Pride should not be allowed to grow ; the desires should not be indulged ; the will should not be gratified to the full ; pleasure should not be carried to excess. (*Li Ki*, p. 62.)

Virtue, according to the Chinese classics, comprises five leading principles, or qualities, which are the constituents of human nature—viz., Benevolence, Righteousness, Propriety, Knowledge, and Fidelity. Of these the first is the fundamental quality ; Mencius, the greatest of the disciples of Confucius, going so far as to declare that "Benevolence is Man." In the writings of Kwang-Tze, the chief disciple of Lao-Tze, Confucius is recorded to have defined benevolence as "to be in one's inmost heart in kindly sympathy with all things ; to love all men ; and to allow no selfish thoughts."

The foundation of all virtue, the stem out of which all moral teaching branches, is Filial Piety. This is the corner-stone of Chinese ethics and politics. A whole volume, called the *Hsiao King*, or Classic of Filial Piety, is devoted to the exposition and inculcation of this virtue, and some specimens of its teaching may be of interest :—

Our bodies are received by us from our parents, and we must not presume to injure or wound them. This is the beginning of filial piety. When we have established our character by the practice of the filial course, so as to make our names famous in future ages, and thereby glorify our parents—this is the end of filial piety. It commences with the service of parents ; it proceeds to the service of the ruler ; it is completed by the establishment of the character. (Chap. i.)

In his general conduct to his parents the son manifests the utmost reverence ; in his nourishing of them his endeavour is to give them the utmost pleasure ; when they are ill he feels the greatest anxiety ; in mourning for their death he

exhibits every demonstration of grief; in sacrificing to them he displays the utmost solemnity. (*Ibid*, chap. x.)

The duty of filial piety does not, however, extend to implicit obedience in everything:—

When a case of unrighteous conduct is concerned, a son must by no means keep from remonstrating with his father, nor a minister from remonstrating with his ruler. Since remonstrance is required in the case of unrighteous conduct, how can simple obedience to the orders of a father be accounted filial piety? (*Ibid*, chap. xv.)

This implies that the personal duties dictated by family affection must be held subordinate to the demands of righteousness as established by the community. Probably the same idea underlies the theory that a king is the father of his people, and so entitled to their filial reverence.

The conception which Confucius taught of the nature and capacities of man is astonishingly high, when we consider the circumstances of the times in which it was framed. The following summary of his philosophy is taken from Professor Douglas's admirable little work, from which most of our quotations in this section are made:—

Man, he taught, is master of his own destiny, and not only so, but he is the equal of heaven and earth, and as such is able to influence the course of nature. By complete sincerity he is able to give its full development to his nature. Having done this, he is able to do the same to the nature of other men. Having given its full development to the nature of other men, he can give their full development to the natures of animals and things. Having given their full development to the nature of animals and things, he can assist the transforming and nourishing powers of heaven and earth. Having assisted the transforming and nourishing powers of heaven and earth, he may with heaven and earth form a trinity. Then he becomes the equal of heaven and earth; and when this stage is reached universal order will prevail, and all things are nourished and perfected. Such is the position which the ideal man occupies in the universe. And the ideal man is endowed by heaven with an ideal nature. All men are born good, and all are alike possessed by heaven-sent qualities which enable them to acquire the ideal nature. That which a man inherits is goodness,

and when that is perfected it becomes his nature.¹

It is not very easy to extract a definite meaning from such phrases as "the full development of nature" and "transforming and nourishing powers"; but the idea that men are born good is a nobler and more hopeful belief than the idea that men are born evil.

As already stated, Confucius laid great stress on benevolence; not merely in the form of almsgiving, but as a spirit governing all the relations of life. The benevolence of the "superior man" is not limited to his own relatives and connections, but extends to the relations between the people and their rulers. The whole human race should be recipients of it; in a word, as Confucius puts it, benevolence is to love all men. It should originate in knowledge and regulation of one's own nature, and should be guided by a sense of justice. Confucius often summarised his ideas of the chief moral qualities in the phrase, "the virtue of humanity," which he thus defined: "He who is able to accomplish five things on earth is endowed with the virtue of humanity: respect for himself and for others, generosity, fidelity or sincerity, diligence in doing good, and love of all men." And, further, he says: "Have sufficient self-control, even to judge of others in comparison with yourself, and to act towards them as you would wish them to act to you. This is what one may call the 'doctrine of humanity,' and there is nothing beyond this."²

Justice was a virtue on which the philosopher laid great emphasis:—

The superior man, in all the circumstances of life, is exempt from prejudice and stubbornness. Justice alone is his guide. He employs all his power to do that which is just and proper, and for the good of mankind.³

He thus defines and illustrates the nature of the "superior man":—

The superior man is he who has equal good-

¹ *Confucianism*, pp. 68, 69.

² *Confucius*, M. Deshumbert, p. 17.

³ *Ibid*, p. 18.

will towards all, and who is without egotism and prejudice.

The common man is he who has only feelings of egotism, and is without a disposition kindly to all men.

The superior man has equanimity and tranquillity of soul. The common man experiences continually trouble and anxiety.

The superior man raises himself continually in intelligence and in power of judgment; the man without merit descends continually into further ignorance and vice.

The superior man is influenced by a sense of justice; the common man by the love of gain.

The superior man places equity and justice above all else.¹

So far as Confucianism has an ideal, it finds expression in the "superior man," who is, or should be, an embodiment of all the virtues:—

He speaks, having thought whether the words should be spoken; he acts, having thought whether his actions are sure to give pleasure. His virtue and righteousness are such as will be honoured; what he initiates and does is fit to be imitated; his deportment is worthy of contemplation; his movements, in advancing or retiring, are all according to the proper rule. In this way does he present himself to the people, who both revere and love him, imitate, and become like him. (*Ibid.*, ch. 9.)

The superior man, rather than have his emoluments superior to his worth, will have his worth superior to his emoluments. (*Lf K7*, book 27.)

The superior man does not take all the profit that he might do, but leaves some for the people. (*Ibid.*)

The virtue referred to in the last extract is *not* guaranteed to be a characteristic of the Chinese official of the present day.

Another description of the "superior man" is one of the most eloquent in the Chinese scriptures, and is believed to have been written of Confucius himself:—

All-embracing is he and vast like heaven. Deep and active as a fountain, he is like an abyss.....Wherever ships and carriages reach; wherever the strength of man penetrates; wherever the heavens overshadow and the earth sustains; wherever the sun and moon shine; wherever frosts and dews fall; all who have blood and breath unfeignedly honour and love him. (*Ibid.*, ch. 28.)

The superior man internally examines his

heart, that there may be nothing wrong there, and no occasion for dissatisfaction with himself. (*Ibid.*)

When the superior man puts on the dress of his rank he sets it off by the demeanour of the superior man. That demeanour 'sets off with the language of a superior man; and that language he makes good by the virtues of the superior man. Hence the superior man is ashamed to wear the robes and not have the demeanour; ashamed to have the demeanour and not the style of speech; ashamed to have the style of speech and not the virtues; ashamed to have the virtues and not the conduct proper to them. (*Ibid.*, book 29.)

The superior man does not confine himself to praising men with his words; when he asks about men who are suffering from cold he clothes them; or men who are suffering from want he feeds them. (*Ibid.*)

Dissatisfaction and calamity will come to him whose lip-kindness is not followed by the corresponding deeds. (*Ibid.*)

The superior man's words have respect to his practice, and his practice has respect to his words. Is not the superior man characterised by a perfect sincerity? (*Ibid.*, 28.)

The love of virtue should be like the love of beauty—from an inward constraint. (*Ibid.*)

To be fond of learning is near to wisdom; to practise with vigour is near to benevolence; to know to be ashamed is near to virtue. He who knows these three things knows how to cultivate his own character. (*Ibid.*)

Where there is a deep and compassionate sympathy in the heart we have humanity evidenced in the love of others. (*Lf K7*, book 29.)

The way to become a "superior man" is to set one's affections on what is right, to love learning, which is the source of knowledge and virtue, with which nothing else can be compared. When righteousness is pursued with sincerity and a mind free from self-deception the heart becomes rectified.

The next step is the "cultivation of the person," by which is meant the uplifting of the character and influence by personal effort.

Up to this stage the individual has been busy only with his own improvement; but the cultivation of the person influences primarily those around him, and ultimately the whole empire. Everyone, therefore, should carefully cultivate his person, having a due regard for others besides himself.....Each man must guard his words and watch his conduct. He must fly all that is base and disquieting, and must take benevolence as his dwelling-place, righteousness as his road, propriety as his garment, wisdom as his lamp, and faithfulness as his charm. Dignity, reverence, loyalty, and faithfulness make up the qualities of a cultivated man. His dignity

¹ *Confucius*, M. Deshumbert, p. 22.

separates him from the crowd ; being reverent, he is beloved ; being loyal, he is submitted to ; and being faithful, he is trusted.¹

Courtesy is near to propriety ; economy is near to humanity ; good faith is near to the truth of things.²

The emphasis laid by Confucius upon "propriety" may appear to indicate little more than a tame and conventional standard of respectability, but it should be remembered that the term covers a wider and higher range of conduct than is the case among ourselves. In our view, reference to any external standard of morals is hardly calculated to strengthen the spirit of love in which natural duties should be performed, yet it is an undoubted fact that the influence of Confucius has largely assisted in making family, piety and social loyalty the dominant factors in Chinese life, and, on the whole, with beneficial results.

Though he had an unwavering confidence in the truth of his teaching, Confucius was remarkable for his personal humility, and for his modest estimate of his own powers and attainments. It is claimed that he was absolutely free from prejudice, obstinacy, egotism, and self-conceit. Here is his opinion of himself :—

If I think of a man who unites saintliness to the virtue of humanity, how can I dare to compare myself with him ! I only know that I strive to practise these virtues without being disheartened, and to teach them to others without being discouraged or despondent.³

A strictly conscientious self-estimate was frequently enjoined by Confucius :—

"When you see a wise man," said he, "think whether you have the same virtues as he. When you see a wicked man, look to yourself, and examine attentively your own conduct."

If we are three who travel together, I shall certainly find two teachers (in my companions). I shall choose the good man to imitate, and use the wicked man to correct myself.⁴

Referring to the opinion of Lao-Tze, that kindness should be extended to the good and to the wicked without distinc-

tion, Confucius was once asked : "What should one think of a man who returns kindness for injuries?" To this the philosopher replied : "If one acts thus, how can one repay kindness itself? One must repay hatred and injuries by equity ; and kindness by kindness." The passage clearly shows that the idea embodied in a familiar Christian rule was well known to these ancient Chinese moralists ; whether such a conception or that of Confucius is the wiser and loftier we need not here attempt to determine.

A high sentiment of honour appears in the next passage :—

In your dealings with men, be true and faithful to your engagements ! Let your words be sincere and true ! Let your acts be always honourable and worthy ! Even if you were in the land of barbarians of the south or of the north, your conduct should be faultless.⁵

Without despising wealth, since he realised its power for good, Confucius uttered a caution which may well be borne in mind during periods when the acquisition of riches is in danger of becoming a universal passion :—

Riches and honour are the desires of men. If one cannot obtain them by honest and fair means, they must be renounced. Poverty and humble positions are what men hate and despise. If one cannot escape these by honest and fair means, one must submit to them.⁶

And the following advice to rulers is excellent :—

A prince should select his ministers according to the promptings of his conscience, having always the public good in view. He must conform to the great law of duty ; and this great law of duty must be sought for in the "virtue of humanity," which is the source of love for all men. This is why even a prince cannot dispense with the duty of correcting and perfecting himself.⁷

In this great duty of moral and intellectual self-culture, which Confucius so frequently emphasised, he assumed man's ability to act without the stimulus of any external spiritual agency ; in other words, he practically dispensed with the

¹ Douglas, p. 401.

² Ibid.

³ Confucius, M. Deshumbert, p. 22.

⁴ Ibid., p. 19.

⁵ Confucius, M. Deshumbert, p. 23.

⁶ Ibid., p. 19.

⁷ Ibid., p. 21.

⁸ Ibid., p. 20.

aid of religious beliefs. It is true he did not deny the existence of a spiritual world, of a heaven, or a Supreme Being. Sacrifices to heaven and to ancestral spirits were part of his system. But he was very reticent on such subjects, considering them obscure and unprofitable, and tending to superstition. His nature was certainly not devoid of the religious element, but a keen perception of the limitations of human knowledge caused it to recede into the background; in fact, Confucius was one who in the present day would be termed an Agnostic; and this naturally forms a recommendation in the eyes of that increasing number of persons who are discovering that every theological doctrine ends in a *cul de sac*. When asked what was death, he pertinently replied: "When one does not yet know what life is, how should one know what death is?"¹ The present life, he held, should be the object of our study. Whence man came, whither he was going, Confucius cared but little; his aim was to promote man's happiness while he was actually here.

The large share which the intellect has in regulating the dictates of the heart is indicated in the words: "Learning without thought is labour lost; thought without learning is perilous."² The sentence, "When you know a thing, to hold that you know it; and when you do not know a thing, to allow that you do not know it—this is knowledge,"³ does not define the limitations of knowledge, but it embodies the spirit which is willing to recognise the existence of a barrier to complete enlightenment, and so makes it less likely that false ideas will be accepted as true.

Confucius "sought an all-pervading unity, in which the relations of life should be all strictly maintained, in which honour should be paid to those to whom it was due, and in which the stirrings of pleasure, anger, sorrow, or

joy should be kept within their proper limits. Self was to be subdued, and the indulgence of the appetites was to be kept under control. Gravity, generosity, sincerity, earnestness, and kindness were to be cultivated, and to the more sterling qualities of the mind should be added the attraction of accomplishments. For when the solid qualities are in excess of the accomplishments we have rusticity, and when the accomplishments are in excess of the solid qualities we have the manners of a clerk. It is only when the two are equally blended that we have a man of complete virtue."⁴ This wise compromise between extremes was a salient feature of the philosophy of Confucius. He aimed at securing an all-round development of nature; he dreaded the development of one quality at the expense of the rest; it was essential to preserve the balance between the whole of our faculties.

Confucius never claimed to originate fresh doctrines; he merely recalled the people to truths which had been formerly known and practised. In his own words, he was "a transmitter, and not a maker, believing in and loving the ancients." Nor did he claim to have reached his own ideal. Imbued with a genuine love of learning, and vigorously advocating the most persevering study, he admitted his own deficiency of knowledge. "I am not virtuous enough," he said, "to be free from anxieties; not wise enough to be free from perplexities; and not bold enough to be free from fear."⁵ Lacking the servility of the courtier and the practical knowledge of the man of the world, "he never strove to advance himself beyond his proper position, nor to make use of his influence to magnify himself in the eyes of his fellow men."⁶

Considering that the philosopher dwelt so largely on the milder virtues, it is a little surprising to read that he attached importance to the virtue of courage. Perhaps it is still more remarkable that

¹ *Confucius*, M. Deshumbert, p. 24.

² *Lun Yu*, ii., 25, Douglas, p. 94.

³ Douglas, p. 95.

⁴ Douglas, *Confucianism*, p. 147.

⁵ *Lun Yu*, xiv. 30, Douglas, p. 147. ⁶ *Ibid.*

in a remote and partially civilised age he should perceive that moral courage is of a higher order than physical. This appears to be the purport of a passage in the Confucian Analects, to the effect that the truly brave man must be righteous and benevolent; he must act up to what he believes to be right, and must be calm in the face of adversity.¹ Concerning courage as a social virtue, we adduce the following passage from Professor Douglas's *Confucianism* :—

The prominence given by Confucius to valour as a component part of virtue is evidence of the position he holds rather as a politician than as a moral philosopher. His leading idea was the preservation of the State. To this all his teachings tend, and those qualities, therefore, which might be expected to lead to this end are naturally estimated by him at a high value. Not that his idea of valour was confined only to mere physical courage. On the contrary, he laid great stress on the moral courage which enables a man to throw aside his faults and failings, and to declare plainly, in the face of temptations and ridicule, that he is seeking after righteousness. "To go on the water and face dragons," said he, "is the valour of the fisherman; to hunt on land and not avoid rhinoceroses and tigers is the valour of the huntsman; to face encounters with deadly weapons, and to regard death as life, is the valour of the soldier; but to recognise that poverty comes by the ordinance of heaven, and that there is a tide in the affairs of men, and in the face of difficulty not to fear, is the valour of the sage."²

It is greatly to the honour of Confucius that he should have had so deep a concern for the welfare of the people in general. Being on one occasion asked what should be done for the people, he replied, "Enrich them"; and when asked what more should be done, he answered, "Teach them." In the *Shu-King*, edited by him, is recorded a saying which, if really uttered at a period of such vast antiquity, is proof of astonishing moral insight. "No virtue," said the Emperor Kuh (2435 B.C.), "is higher than to love all men, and there is no loftier aim in government than to profit all men."³

Confucius did not elaborate any regular

system of ethics. As occasion arose he uttered a great number of maxims of a moral and political nature, most of which were probably written down at the time by the disciples who accompanied him in his wanderings. Many of these cannot be taken as of universal obligation, being tinged by his excessive reverence for antiquity, as well as for the external forms of conduct, and having a limited application to Chinese ideas alone. But, as we have seen, there remains a considerable body of teaching, of which the wisdom, penetration, and wholesome common sense commend themselves to European and Chinaman alike. The admiration of his own countrymen is evidently as sincere as it has proved enduring; indeed, the extraordinary reverence in which the sage is held has been a main factor in the political stability of the nation.

It may prove interesting to append the following set of sixteen maxims, which were issued to his people by an Emperor of China towards the end of the seventeenth century, as a short compendium of the Confucian doctrines :—

1. Esteem most highly filial piety and brotherly submission, in order to give due prominence to the social relations.
2. Behave with generosity to the branches of your kindred, in order to illustrate harmony and benignity.
3. Cultivate peace and concord in your neighbourhoods, in order to prevent quarrels and litigations.
4. Recognise the importance of husbandry and the culture of the mulberry-tree, in order to ensure a sufficiency of clothing and food.
5. Show that you prize moderation and economy, in order to prevent the lavish waste of your means.
6. Make much of the colleges and seminaries, in order to make correct the practice of the scholars.
7. Discountenance and banish strange doctrines, in order to exalt the correct doctrine.
8. Describe and explain the laws, in order to warn the ignorant and obstinate.
9. Exhibit clearly propriety and yielding courtesy, in order to make manners and customs good.
10. Labour diligently at your proper callings, in order to give settlement to the aims of the people.
11. Instruct sons and younger brothers, in

¹ *Confucianism*, p. 107.

² *Ibid.*, p. 106.

³ *Ibid.*, p. 132.

order to prevent them from doing what is wrong.

12. Put a stop to false accusations, in order to protect the honest and the good.

13. Warn against sheltering deserters, in order to avoid being involved in their punishments.

14. Promptly and fully pay your taxes, in order to avoid the urgent requisition of your quota.

15. Combine in hundreds and tithings, in order to put an end to thefts and robbery.

16. Study to remove resentments and angry feelings, in order to show the importance due to the person and life.

Though most of these injunctions are of obvious practical value (the prudential tone of No. 14 is particularly noticeable from an official point of view), they do not seem to embody all that is best in the Confucian ethics; the fine definition of benevolence, for instance, being omitted. Still, it is worth pointing out that, though a motive for good conduct is in each case referred to, it is never based upon the selfish hope of ultimate reward to the individual.

II.—Taoism.

Taoism, one of the popular religions of China, was founded by a sturdy and independent teacher named Lao-Tze, who, during the latter part of his life, was contemporary with Confucius. The exact date of his death is unknown; but, as he was born in 604 B.C., half a century earlier than the rival philosopher, he must have lived to a great age, since Confucius is reported to have been fifty-one years old on the occasion of their first interview. And this was while Lao-Tze held a State appointment, which he afterwards gave up, passing then, for an indefinite time, a wandering and secluded life.

Lao-Tze was a man of powerful intellect and rugged manners; and, having retired into solitude out of disgust with the ways of the world, he looked with a certain contemptuous scorn on the efforts of Confucius to make straight the crooked paths. On their meeting at the Court of the Emperor Chow, Confucius sought the elder's sympathy in his failure to re-

generate society, but met with a needlessly sharp rebuff. While there were points of contact in the doctrines of the two men, each holding that human nature is essentially good, evil being the result of untoward circumstances acting on a weak but not vicious nature, the teaching of Lao-Tze was at once more spiritual in its aspirations and more profound in its philosophy; it appealed to the heart rather than enjoined ceremonies. This peculiarity was probably due to the source from which his conceptions were originally drawn. The origin of the ethic of Confucius is to be found in the ancient writings of his own country; Lao-Tze drew his inspiration from the Indian philosophers who preceded the rise of Buddhism. His entire system, both in conception and in details, is distinctly Brahminical, says Mr. Douglas. Instead of recommending ritual, he advocated a return to the primitive simplicity of the times when ceremonies and observances had not been instituted. Although a recluse, he was actuated by the same sympathy for his fellow creatures and the same desire for their social and political improvement as animated Confucius, and his teaching constantly kept this end in view. To the formalists Lao-Tze says:—

Abandon your wisdom, and cast away your prudence, and the people will be a hundredfold more happy. Renounce your philanthropy and throw aside your justice, and the people will return to filial piety and fatherly compassion. Renounce your cleverness and forego your gains, and thieves will disappear. And appear in your own unadorned simplicity, preserve your purity, curb your selfishness, and curtail your ambitious desires.¹

We find in Lao-Tze a far more explicit recognition than in Confucius of a spiritual power superior to man:—

I have three precious things which I hold fast and prize—namely, compassion, economy, and humility. Being compassionate, I can be brave; being economical, I can be liberal; and being humble, I can become the chief of men. But in the present day men give up compassion, and

¹ *Tao Tih-King*, c. xix.; Douglas, *Confucianism and Taoism*, p. 193.

cultivate only courage; they give up economy, and aim only at liberality; they give up the last place, and seek only the first; it is their death. Compassion is that which is victorious in the attack and secure in the defence. When Heaven would save a man it encircles him with compassion."¹

Some of the political maxims of Lao-Tze indicate an advanced degree of enlightenment. "Everything for the people, and everything by the people,"² the substance of the modern democratic ideal, is part of his system. "A nation is a growth, not a manufacture,"³ is a saying which embodies a profound truth. He uttered emphatic protests against war and violence, and for analogous reasons opposed capital punishment. He held, moreover, that if a State were well governed the necessity for capital, or, indeed, any other punishment, could not arise.

If the people could be taught to love simplicity and purity, crime would cease to exist. But it is the striving after wealth, learning, and position which disorders men's minds, rouses their passions, and causes them to think lightly of death.....Men who live only for amusement, or for the indulgence of their selfish caprices, are willing enough to resign their being when their appetites fail them, from whatever cause, and when their ambitious schemes fall to the ground. And when once a people has reached this stage of recklessness no punishment will be effectual to prevent their rushing into sin. "When the people do not fear death, to what purpose is death still used to overcome them?" But if there be a man worthy of death, there is always the "Great Executioner," in whose hands are the issues of life and death..... "Now, for any man to act the executioner's part is to hew out the Great Architect's work for him. And he who undertakes to hew for the Great Architect rarely fails to cut his hands."⁴

This seems to imply a belief in an over-ruling Providence, but in the following quotation that idea appears to be discountenanced:—

Judge not your fellow-men. Be content to know yourself. Be chaste, but do not chasten others. Be strictly correct yourself, and do not cut and carve other people. And learn not to impute wickedness to the unfortunate. If one

man dies and another is preserved alive, why point at either of them as the object of Heaven's hatred? A truly good man loves all men, and rejects none; he respects all things, and rejects nothing; he associates with good men, and interchanges instruction with them; but bad men are the materials on which he works, and to bring such back to Tao is the great object of his life.⁵

Lao-Tze laid great stress on the virtues of self-abnegation, self-knowledge, and self-restraint. Of courage, truth, and honesty he says little; but if, in this respect, he fell below Confucius, most Christian moralists would consider that he surpassed him when he proclaimed the golden rule of Christianity, "Recompense evil with good."⁶ Considerable discussion arose between their respective followers on this point. The words of Lao-Tze are quoted approvingly by several of his disciples:—

To those who are good to me I am good, and to those who are not good with me I am also good. (*Tao Tih King*, c. xlix.)

His ideal man was an embodiment of Tao, or Deity, and such a state it should be the object of every man to reach.

To know others is to be wise; but he who knows himself is enlightened. He who overcomes others is strong; but he who conquers himself is mighty. He who has a contented mind is rich. He who acts with energy has a purpose. He who does not act contrary to his nature continues long; and he who dies and perishes not enjoys eternity.⁷

He who lightly promises is sure to keep but little faith; he who is continually thinking things easy is sure to find them difficult. (*Ibid*, c. lxiii.)

Action should be taken before a thing has made its appearance; order should be secured before disorder has begun. (*Ibid*, lxiv.)

Like his more famous contemporary, Lao-Tze was fond of dwelling on the simplicity and beauty of primitive life, when sages endeavoured to keep the people innocent and simple, instead of teaching them to be learned and clever; to make them honest and unselfish, not to encourage them in hypocrisy and

¹ Douglas, *Confucianism and Taoism*, p. 194.

² *Ibid*, p. 197. ³ *Ibid*, p. 198. ⁴ *Ibid*, p. 204.

⁵ Douglas, *Confucianism and Taoism*, p. 205.

⁶ *Ibid*, 206.

⁷ *Ibid*, c. xxxiii., Douglas, p. 207.

fraud. He had a healthy scorn for the vain person, and for the glib and shallow talker. As a man on tiptoe cannot stand still so a man who is always seeking prominence in talking cannot remain quiet and self-contained.

A man who is self-displaying does not really shine; he who is self-approving is not held in esteem; he who is self-praising has no merit; and he who is self-exalting does not stand high.

Lao-Tze considered that "one pure act of internal resignation was worth more than a hundred thousand exercises of one's own will." But self-denial is a virtue which may readily be abused; and the sage forgot that every act of internal resignation is an exercise of the will, and one which often requires greater volitional power than an act of personal gratification.

The pure morality of the Chinese classics is the more surprising, in view of the mass of absurd formalities with which it is burdened. Here is a fine description of the good man :—

He will not tread in devious by-ways; he will not impose on himself in any secret apartment. He will amass virtue, and accumulate deeds of merit. He will feel kindly towards all creatures. He will be loyal, filially, loving to his younger brothers and submissive to his elder. He will make himself correct, and so transform others. He will pity orphans and compassionate widows; he will respect the old and cherish the young. Even the insect tribes, grass and trees, he should not hurt. He ought to pity the malignant tendencies of others; to rejoice over their excellences; to help them in their straits; to rescue them from their perils; to regard their gains as if they were his own, and their losses in the same way; not to publish their shortcomings; not to vaunt his own superiorities; to put a stop to what is evil, and display what is good; to yield much and take little for himself; to receive insult without resenting it, and honour without an appearance of apprehension; to bestow favours without seeking for a return, and give to others without any subsequent regret. This is what is called a good man. (*Thái Shang*, or Tractate of Actions and their Retributions.)

The following is from another of the Taoist books called the *Classic of Purity* :—

The spirit of man loves purity, but his mind

disturbs it. The mind of man loves stillness, but his desires drive it away. If he could always send his desires away, his mind would of itself become still. Let his mind be made clean, and his spirit will of itself become pure. (*K'ing K'ang King*, c. iii.)

The philosophical quietism and indifference to life which are prominent in the faiths of the East are held up for imitation in the following sentence of Kwang-Tze :—

The true men of old knew nothing of the love of life or the hatred of death. Entrance into life occasioned them no joy; the exit from it awakened no resistance. Composedly they went and came. (*Writings of Kwang-Tze*, b. vi.)

The conception of Taou bears some resemblance to that of the Buddhist Nirvāna. Mr. Douglas draws attention to the "important distinction" that, while "the entrance into Nirvāna is the extinction of existence, the return to Taou is but the recall of the finite to the infinite, the creature to the creator." It should, however, be borne in mind that both these terms denote ideas of a very vague and intangible nature. Many Buddhist authorities consider that Nirvāna implies not cessation of existence, but precisely that absorption of the individual spirit into the universal spirit which Taou is intended to signify, and if they are right the importance of Mr. Douglas's distinction vanishes.

Of the nature of this infinite spirit Lao-Tze knew nothing, and never attempted the shallow dogmatism which flows so readily from the lips of ignorance. His remarks concerning it appear to be intended to describe its modes of operation rather than to define its essential qualities. To him it was something which "could not be named," something which "baffled investigation"; it is clear that he did not regard it as having personality. "Taou," he says, "is empty; in operation exhaustless. In its depth it scans the future of all things. It blunts sharp angles. It unravels disorders." It softens the glare."

* Douglas, p. 309.

* Douglas, p. 212.

* *Ibid*, p. 211.

He ascribed to it, however, beneficent attributes, which are not readily distinguishable from those of a personal being. "Like a loving parent," says Mr. Douglas, in summarising his teaching, "it watches with a providential care over all created beings. From its portals they issued forth into life, and through all the changes and chances of existence it continues on their right hand and on their left, nourishing in love, imparting life to all, and refusing none. Though before all, above all, and in all, it yet assumes no authority; and, though all things submit to it, it does not regard itself as their master.....It does not strive with man.....It enters into the life of each individual thing; it penetrates the impenetrable; it produces, nourishes, enlarges, feeds, completes, ripens, cherishes, and covers all things. It is the good man's glory and the bad man's hope.....It gives a double portion to those who supply the wants of the needy.....It is everything and nothing; it is the smallest possible quantity, and yet the whole. It is the unity of the universe, and as such supports, strengthens, and nourishes all created things."¹

Such a conception of the infinite—vague, indefinite, and paradoxical—would have been far from satisfactory to the framers of the Westminster Confession.

Taoism affords another and very melancholy instance of religious degeneration. The great philosopher was followed by a race of pigmies. Modern Taoism is mainly a system of magic and incantations, and its priests are the most ignorant and debased in China. But this cannot be deemed the logical result of Lao-Tze's teachings. Superstitious influences derived from Hinduism and elsewhere have penetrated his system, and even enthroned the rugged figure of the founder in a triple form of deity, which he himself would have rejected as an absurdity. The dreary fatuity of Taoism in its doctrinal aspect

is, however, relieved by the wide acceptance of two small volumes, in which its practical side is set forth in a series of brief ethical maxims, which exert an enormous influence on the Chinese people. The first of these is the *Kan Ying Peen*, or *Book of Rewards and Punishments*, of which the following aphorisms are among the more favourable specimens :—

Be humane to animals.
Practise righteousness and filial piety; be affectionate towards your younger brothers, and respectful towards your elder brothers.
Rectify yourself, and convert men.
Have pity for orphans, and show compassion to widows.
Pity the misfortunes of others.
Rejoice in the well-being of others.
Help them who are in want.
Save men in danger.
Do not expose the faults of others.
Never boast of your superiority.
Prevent the evil, and exalt the good.
Forego much, and take little.
Bestow favours without expecting recompense.
Give willingly.
Never confuse right and wrong.
Don't rank faults as crimes.
When you recognise a fault in yourself, correct it.
When you know what is right, do it.
Don't seek your own advantage at the expense of others.
Don't suck other men's brains.
Don't conceal the virtues of others.
Don't expose the defects of others.
Don't give yourself up to ease and pleasure.
Never say anything you don't mean.²

The second of these volumes is the *Yin-chih-wän*, or *Book of Secret Blessings*. It is so short that its words are only 541 in number, but its benevolent spirit causes it to be prized by Buddhists, Confucianists, and Taoists alike. In the following passage Mr. Douglas summarises the most valuable portion of its contents :—

Its teachings rest on a sound foundation, where they inculcate the necessity of purifying the heart as a preparation for all right-doing. Be upright, it says, and straightforward, and renew your heart. Be compassionate and loving. Be faithful to your master, and filially pious to your parents. Honour your elder brethren, and

¹ Douglas, pp. 211-15.

² Douglas, *Taoism*, c. vi.

be true to your friends. Help the unfortunate ; save those who are in danger ; and set free the bird taken in a snare. Have pity towards the orphan and the widow ; honour the aged, and be kind to the poor. Feed the hungry, clothe the naked, and bury the dead. Use just weights and measures, and do not overtax the people. Succour the sick, and give drink to the thirsty.Hide your neighbours' faults, and speak only of their good deeds, and let your mouth utter the true sentiments of your heart. In all your actions follow the principles of Heaven, and in all your words follow the purified heart of man. Have all the sages of antiquity before your eyes, and examine carefully your con-

science. What good thing will be withheld from him who practises "secret benefits" ?¹

It can hardly be disputed that the true moral relations of human beings have seldom been set forth with greater force and comprehensiveness than by these ancient moralists, who constitute, perhaps, the chief claim of China to the world's esteem and admiration.

¹ Douglas, *Taoism*, c. vii.

MOHAMMEDANISM

FROM more than one point of view, the system established by the great Arabian reformer Mohammed is worthy of serious study. That one of the leading Christian Powers should also be the greatest Mohammedan Power of modern times is a striking fact, testifying to a degree of toleration which would have been impossible to the Christianity of the Middle Ages, and also showing that even for prudential considerations it is well for Englishmen to understand a religion with which they are brought into close relationship. Moreover, the religion of Mohammed is the only serious rival to Christianity ; and, being from the simplicity of its main conception and the suitability of its ordinances well adapted to the needs of the semi-civilised races of the East, it has, especially in Africa, advanced with a rapidity which Christian missionaries are unable either to check or to emulate.

A brief sketch of Mohammed's life will form a suitable introduction to an account of his religious system. Most faiths centre in a great personality, and this is specially true of Islam. There are no "historic doubts" as to the actual existence of Mohammed ; throughout his active career almost every detail of his life is known ; every word of the

Koran emanated from him, and as to this day the entire religious, political, and social system of the Moslem world is based on this one book, it is important to gain some insight into the character of the man who produced it. That career is of extraordinary interest ; that character was one of the most powerful influences in human history.

Arabia, about the time of Mohammed's birth at Mecca in A.D. 570, was in a state of religious unrest and political chaos. Its wandering inhabitants, who are believed to be descendants of Abraham through Ishmael, and were therefore closely akin to the Jewish people, were mainly idolaters worshipping stars, stones, and fetishes, the special object of their adoration being the sacred stone contained in the Kaaba, which was believed to have been a kind of crystal originally brought straight from Paradise by the angel Gabriel, but which had become black by contact with the sinful lips of innumerable worshippers. There were many Jewish colonies which had been established after the destruction of Jerusalem 500 years earlier, while a number of Christian sects made the influence of their faith in more or less debased forms perceptible among the native tribes. The chief of these sects

were the Nestorians, the Arians, the Sabellians, the Eutychians, the Marianites, the Collyridians; but many other forms of religious eccentricity flourished in the freedom of the desert. The Nestorians, in the person of a half mythical monk, are supposed to have had considerable influence on the future prophet; but, according to Wellhausen, his leading tenets were drawn less from sources of a distinctively Jewish or Christian type than from the teachings of an unorganised body known as the Hanfites. These were men who did not attach themselves to any religious community, but were anchorites of an individualist and ascetic character, who taught a monotheistic faith in which elements of Essenism and Christianity were mingled. This comparative purity of life and doctrine doubtless helped to prevent the utter decay of religion in the Arabian peninsula; but the urgent need of moral reform was perceived by many before the advent of Mohammed. Indeed, a widespread expectation was in the air that the time was approaching when an Arabian Messiah should appear and found a new religion. The ground was prepared for a great social and religious revolution. The time was ripe, and the man appeared.

The father of Mohammed died before his son's birth, and, having at six years of age lost his mother also, the boy was brought up by his uncle, Abu Talib, who, though not a believer in his mission, remained while he lived the prophet's best friend. Until manhood Mohammed was in poor circumstances, tending the flocks of sheep and assisting his uncle in his business as a merchant. At the age of twenty-five Mohammed, through the offices of Abu Talib, obtained employment as a camel driver with a rich widow named Khadija, and took charge of a caravan conveying merchandise to Syria. Pleased with his shrewd and successful management, and attracted by his personal beauty, Khadija sent her sister to offer the young man her hand in marriage. Matters were

promptly arranged, and Mohammed became a man of wealth and position. No great success, however, attended his own business enterprises. Religion and commerce sometimes require a good deal of reconciling, and Mohammed was not then an adept in the art of making the best of both worlds. Naturally reserved, and with a mind disposed to a poetic and dreamy mysticism, his mundane affairs were somewhat neglected. His religion assumed an increasingly earnest tone; he spent a large part of his time in lonely meditation in the desert and among the hills, and many an unseen conflict left its trace upon his soul.

Not until he was forty years old did Mohammed receive his first "divine revelation" in the solitude of the mountains near Mecca. Translated into modern language, this means that he then first became convinced that he had a mission to fulfil, to arouse men from their sins, their indifference, their superstition, to thunder into their ears a message from on high, and awaken them to living faith in one indivisible, all-powerful, and all-merciful God. Prolonged fasting, days of ecstatic contemplation, and vigils of the night in the silent valleys and gloomy mountain caves had made him a visionary, with a fanatical faith that God had inspired him to be the last and greatest of the prophets. This revelation, generally believed to be referred to in the short 96th sura of the Koran, he communicated to none but his immediate relatives and a faithful friend, Abu Bekr. Painful doubts as to the reality of the vision oppressed him, but were dispelled by the sympathy of his friends. For a long time haunted by these doubts of the divinity of his mission, his depression became so great that he was more than once on the point of committing suicide. Many of his friends called him a fool, a liar, a mad poet, and the city of Mecca for several years illustrated the proverb that a prophet hath no honour in his own country by a decisive rejection of his

claims. When conviction, however, had once taken possession of his mind, it was unshakeable. When his uncle begged him to cease his attempts to convert the Meccans, and so put an end to constant trouble, Mohammed said: "Though they gave me the sun in my right hand and the moon in my left to bring me back from my undertaking, yet will I not pause till the Lord carry my cause to victory, or till I die for it." Turning away, he burst into tears, and Abu Talib replied: "Go in peace, son of my brother, and say what thou wilt, for by God I will on no condition abandon thee."

The little body of believers grew slowly. In four years Mohammed had about forty proselytes, mostly of the lower ranks, and he then felt himself justified in coming forward as a public preacher and denouncing the superstitions of the Meccans. To establish a new religion was, so far, no part of his intention; he desired simply to recall them to the purer and truer faith of their ancestor, Abraham. Zealous for the worship of the Kaaba, and dreading lest the profitable pilgrimages to their city should fall into decay, the people of Mecca showed the bitterest hostility to Mohammed, opposing and ridiculing his pretensions at every turn. So violent was their hatred that Abu Talib thought it prudent to shelter him for a time in a place of security in the country. Mohammed's subsequent bitterness and intolerance towards the Meccans must have arisen in part from their persistent enmity against him. The sudden conversion of the gigantic Omar, afterwards the second Caliph, secured to Mohammed a powerful supporter. During the seclusion of his chief he continued to spread the doctrine, and after three or four years a truce was patched up, and Mohammed returned to Mecca. About this time his wife died, his uncle followed, and changes of fortune reduced him again to poverty. He went to another part of the country, but found himself in danger, and barely

escaped with life. A wonderful dream of a journey to Jerusalem on the back of the fabled horse Borak aroused the sceptical smiles of even his own followers. But a turning-point in his career was at hand. In a party of pilgrims from the rival city of Yathrib, afterwards called Medina, Mohammed made several converts, who were apparently predisposed by Hanifitism to accept his essential doctrines. On their visit the following year their numbers were so greatly increased that Mohammed entered into an alliance with them, and formed the design of seeking a more congenial home in the friendly city. His flight thither in 622 was considered an event of such supreme importance that the Mohammedan era or Hegira is dated from it.

Mohammed was now among friends; his converts increased rapidly in numbers, and the once-despised impostor was recognised as the ruler of a city and of two powerful tribes. He soon felt himself strong enough to attack the Meccans in open warfare, and the victory of Bedr added greatly to his renown and the number of his adherents. A campaign against the Jews, who had received with taunts and ridicule Mohammed's attempts to convert them, resulted in the easy capture of many of their strongholds. A repulse at Ohod at the hands of the famous warrior Khalid checked, but did not prevent, the rapid growth of the new power. Missionaries were sent to all parts of Arabia, and even to neighbouring countries, including Egypt and Persia, and a year later the prophet celebrated in peace the pilgrimage in the holy city of his enemies. An expedition against the city of Kheibar in 628 nearly cost Mohammed his life. A dish of poisoned meat was put before him, and, though he only tasted it, the effects of the poison remained in his system for the rest of his life. In September, 629, a combined force of Arabs and Romans inflicted a disastrous defeat upon the Moslem army; but fresh victories made good the loss, and the final conquest of

Mecca was followed by the submission of the tribes and the acknowledgment of Mohammed's spiritual and temporal supremacy over the Arabian peninsula. The vanquished marvelled at the magnanimity of the victor. Only three or four persons, and those criminals, were put to death, and a general amnesty was then proclaimed. This lenity, however, was not invariably practised. Two years before a Jewish tribe had befriended the Meccans, though without taking arms against the Moslems, who lay besieged in Medina. Both parties were in extremity; the siege had to be raised; a terrible storm scattered the enemies of the faith; and the unfortunate Jews, to the number of 600 or 700, were savagely butchered in cold blood before the eyes of the prophet. In the year 632 extensive preparations were made for a campaign against the Syrians, and while engaged in this work Mohammed was seized with fever. His strenuous labours, intense excitement, the loss of his little boy Ibrahim, and the excruciating pain sometimes felt from the poison, further combined to weaken his frame. He became aware that his end was approaching; he addressed his followers in the mosque as often as he was able, exhorting them to righteousness and piety and peace among themselves. Each man, he declared, must work out his own salvation. He read passages from the Koran, asked forgiveness of any whom he had wronged, appointed his successors, and prepared his weeping followers for his death. His head pillowed on the lap of his favourite wife, Ayesha, his lips murmuring of pardon and paradise, the dying agonies of a great soul came to an end, and the prophet of Arabia breathed his last.

His people were moved to keen distress. Omar, half-frantic, drew his scimitar, rushed among the crowd, and declared he would strike off the head of anyone who dared to say the prophet of God was no more. Abu Bekr calmed him, and preached resignation to the will of God.

Mohammed was a man of imposing presence, of medium height, broad-shouldered, and strongly built, with fine features, coal-black hair and eyes, and a long beard. His mental powers were of a high order, his manners reserved yet affable and courteous, in speech laconic and often humorous, a man of strong passions but noble impulses, capable of great love, great generosity, and great vengeance—altogether a character of surprising force, capacity, shrewdness, and determination. Temperate and prudent in youth, he gained in manhood the name of "Al Amin," or "the faithful," from his fair and upright dealing. Just and affectionate in private life, he lived in the humblest style in a poor hut, eating the plainest food, lighting his own fire, and mending his own clothes and shoes, having given his slaves their freedom. For months together he would seldom eat a hearty meal, always sharing it with those whose need was greater: a number of the poor lived entirely on his generosity. Perfidious and cruel on more than one occasion, he was capable of the noblest magnanimity. The following beautiful story is worth passing on: "Sleeping one day under a palm tree, he awoke suddenly to find an enemy named Durthur standing over him with drawn sword. 'O, Mohammed, who is there now to save thee?' cried the man. 'God,' answered Mohammed. Durthur dropped his sword. Mohammed seized it, and cried in turn: 'O, Durthur, who is there now to save thee?' 'No one,' replied Durthur. 'Then learn from me to be merciful,' said Mohammed, and handed him back the weapon. Durthur became one of his firmest friends."

Mohammed was highly susceptible to the influence of female beauty. He made such ample use of his opportunities that by 629 he had had eleven wives, though he did not take a second till after the death of Khadija. Heaven was indulgent to the prophet's weakness, and vouchsafed special revelations at convenient seasons to justify privileges in

excess of those allowed to ordinary believers. Such lavish matrimony, however, had its drawbacks; the ladies quarrelled among themselves, and divine interposition became necessary to the restoration of domestic order. Mohammed has been severely blamed for his relations with the other sex, and specially for the opportune revelations by which he sanctioned his undue indulgence. Obviously, however, in this as in other matters, it is not quite fair to judge him by standards which were unknown to his age and country. The example of the Hebrew patriarchs may extenuate, though not perhaps remove, the censure, while it might be urged that so many Christian rulers have similarly offended that we should hesitate to cast the first stone. And, as Mr. Bosworth Smith points out, if Mohammed gave himself exceptional privileges, he imposed on himself exceptional privations in the way of prayers, fasting, and poverty. To consider Mohammed a voluptuary in the ordinary sense would, therefore, be too harsh an application of the term.

The fanatical devotion which Mohammed aroused in his followers was one of the chief causes of his ultimate success. His intense earnestness first convinced them of the reality of his mission, and esteem for the man was reinforced by respect for his achievements. For long the Arabs would have none of his religion, but, impressed by his growing power, they grew to believe that nothing could withstand the might of his deity; they willingly gave up the idols to which they were but half-devoted, and abandoned themselves to enthusiasm for a grander cause. Over his immediate followers his powerful personality gave him a marvellous ascendancy. The wisdom of his decisions at Medina is generally admitted; indeed, Wellhausen considers Mohammed's work in that city as redounding more to his credit than the production of the Koran. Clearly the religious enthusiast had a strong vein of practical good sense in his strangely compacted nature.

The question of Mohammed's sincerity has been a subject of prolonged and sometimes far from lukewarm discussion. At one time he was usually called (as by Dante) "the false prophet," and no one thought of questioning the aptness of the designation. Nowadays we have a little more charity and a good deal more knowledge. A Christian writer, the Rev. J. W. H. Stobart, remarks on the change which has taken place in regard to the founder of Islam. Luther regarded him as the first-born of Satan; Melancthon as having been inspired by the same personage; Prideaux considered him as from first to last a wilful deceiver, and so forth. As Mr. Stobart says, the time has come when such bitter epithets and sweeping condemnation are unnecessary, and notes the opinion of Freeman that "it is no longer thought any part of the duty of a Christian writer to see nothing but wickedness and imposture in the author of the great antagonistic creed."¹ Mr. Stobart's own attitude, however, is not entirely free from the prepossessions which he deprecates. Adopting the view of Sir William Muir, he regards Mohammed's conception of his divine mission as resulting from the promptings of "spiritual pride and ambition," under the temptation of which "he fell."² "If Mohammed's sole purpose had been the search after truth, if his eye had been single, the still small voice would have doubtless suggested the way," because "it is hard to believe that the Spirit of Truth leaves in darkness and error the honest heart which looks to Him for light."³ But "the stealthy advances of a worldly ambition blinded his mental vision, blunted his dependence on a Higher Power, and by the suggestions of the Evil One took captive his soul."⁴ There is more to the same effect, as well as a reiteration of Sir W. Muir's charge that Mohammed was guilty of blasphemously "forging the name of God."

¹ *Islam and its Founder* (S. P. C. K.), p. 64.

² *Ibid.*, p. 66.

³ *Ibid.*

⁴ *Ibid.*

Such remarks would appear to have come direct from a theological college. Their lack of enlightenment is partially compensated by the admission on the next page that "ambition could hardly have been altogether his prevailing motive, for he made no provision to perpetuate in his own family the temporal power which was his." Wealth and regal state he coveted not, for "when his name was exalted above the name of all creatures, borne on the prayers of the faithful, and made second only to Allah himself, he still occupied the same humble house, at times performed even the menial duties of his household, still exercised himself in acts of humility, and still expressed himself as much as ever in need of the mercy of the All-Compassionate for his entrance into Paradise."¹ This writer comes to the conclusion that "a substantial belief in the reality of a divine commission impelled Mohammed forward," and "was the secret motive which called into being those spiritual claims of which the results have been so memorable." His original purity and sincerity, however, became tarnished by interested motives, until, "by the very deceitfulness of his heart, he came to consider his wild and sinful impulse as the will of Heaven, and as indubitable inspiration from on high."²

There is probably some truth in the latter verdict, for the character of Mohammed undoubtedly, as his circumstances changed, lost a good deal of its ethical sweetness; but the writer does not err on the side of charity. There is a general consensus of opinion regarding Mohammed's complete sincerity during his earlier career, combined with a suspicion that he became self-seeking and insincere as he grew older. Religious degeneration is not an uncommon phenomenon, it is true; but its importance must be grievously over-estimated when its manifestations are treated as promptings of the "Evil One." That is

no great advance on the position of Luther. Even Sir William Muir admits that Mohammed's conviction that he was inspired was reached slowly and only after severe mental distress, and that "there is nothing so remarkable as the faith reposed by Mohammed in the Deity as an ever-present and all-controlling agency."³

Wellhausen points out that Mohammed had apparently everything to lose and nothing to gain by proclaiming the new faith. His estrangement with his native city must have caused him great anxiety, for to an Arab it is a living death to be at variance with his own people.⁴ It is never easy for the mind of the West to fathom the mind of the East. It is by no means an improbable supposition that actions which to us may appear the result of conscious deception may to an Arab imply nothing of the kind. To him the suggestions of prudence and self-interest may not be at all incompatible with the deepest ecstasy of the pietist. Like many other great mystics, Mohammed was afflicted with epilepsy, or more probably catalepsy—a derangement which must have had a large share in producing the medley of ill-digested ideas which composed his mental equipment. He had convulsions, ecstasies, trances; he heard voices; he saw visions; angels appeared to him; God spoke to him as clearly as to Abraham of old. Such a mind, dominated by the fierce fatalism of the East, limited by hereditary influences, filled with overwhelming aspirations towards righteousness, but struggling against an inevitable ignorance, must be more or less incomprehensible to modern reasoners. That Mohammed never attained a consistent and worthy conception of deity is not surprising. It is what he actually achieved that astounds us. He cannot be measured with a foot-rule; he must be judged by the ideas and conditions of his own time.

On this question of Mohammed's

¹ *Islam and its Founder*, p. 67.

² *Ibid.*, p. 68.

³ *Mohammed and Islam*.

⁴ *Encyclopædia Britannica*, art. "Mohammed."

alleged self-deception, Mr. Bosworth Smith pronounces an opinion which appears more consonant with both reason and charity than those previously quoted: "Who can draw the line where enthusiasm ends and self-deception or even imposture begins? No one who knows human nature will deny that the two are often perfectly consistent with each other. Once persuaded fully of his divine mission as a whole, a man unconsciously begins to invest his personal fancies and desires with a like sanction; it is not that he tampers with his conscience; he rather subjects conscience and reason, appetite and affection, to the one dominating influence; and so, as time goes on, with perfect good faith, gets to confound what comes from below with what comes from above.....The more fully convinced a man is of the goodness of his cause, the more likely is he to forget the means in the end; he need not consciously assert that the end justifies the means, but his eyes are so fixed upon the end that they overlook the interval between the idea and its realisation."¹ We have ample evidence of the substantial unity of Mohammed's career. He never wavered in his belief in his mission, yet he never represented himself as more than a weak and fallible mortal. "I doubt," says Mr. Bosworth Smith, "whether any other man whose external conditions changed so much ever himself changed less to meet them; the accidents are changed; the essence seems to me to be the same in all."²

Let us judge Mohammed fairly, and keep the facts in mind. We know that in a world of superstition he proclaimed the unity of a supreme being; that he limited polygamy and reckless divorce; that he encouraged the emancipation of slaves and set the example; and that he laid down as a fundamental principle the equality of all Moslem believers;³ that he was amiable and just, generous and

tolerant. We in the present day are not likely to consider him divinely inspired, and it is equally hard to hold that he was an impostor.

Islam, which is the correct name of the youngest of the great religions, "comes from a word meaning in the first instance 'to be at rest, to have done one's duty, to be at perfect peace,' and is commonly held to mean 'submission to the will and commandments of God.'"⁴ Moslem, or Muslim, the name given to its believers, is derived from *Islam*, and means "a righteous man." To practise submission to the will of God obviously implies the belief that that will has made its dictates known; and the religion of Mohammed, like that of the Jews and Christians, is avowedly based upon a direct revelation alleged to have been made by God to man. No difficulty arising from the vague connotation of the term "God" presents itself to the Moslem; to him God is a being so well known, holding such intimate relations with the life of human beings as to make his guiding care of them not merely credible, but axiomatic.

To the simple root-conception of Islam, faith in one God, must be added its consequence, faith in Mohammed as the last and greatest of his prophets. To the Moslem the one is as inevitable as the other; the European distinguishes between them. In the words of Gibbon: "If the first article is an eternal truth, the second is a necessary fiction."⁵

The revelations believed to have been made at various times to Mohammed, as the circumstances of his career furnished occasion, were dictated by him to a scribe who wrote them down, probably in a hurried manner, on any convenient substance, such as date leaves, tablets of white stone, bones, and pieces of parchment: these, after the prophet's death, were collected and copied, without regard to order of time or subject, and formed the Koran, or *the Reading*, the 114

¹ *Mohammed and Mohammedanism*, p. 118.

² *Ibid.*

³ *England and Islam*, by H. Crossfield.

⁴ *Clodd's Childhood of Religions*, p. 204.

⁵ *Decline and Fall*, vol. iii., p. 488.

suras or chapters of which not only furnish the whole civil as well as religious code of the Mohammedans, but are believed by them to be the direct, uncreated, and eternal word of God, perfect and complete in every particular.

The Koran is a strange book. The lofty and the puerile, the grand and the ignoble, are so intermingled that it is sometimes hard to realise that it is the product of one mind; hard to feel that the benignity and the ferocity of Mohammed's conception of God did not present themselves to him as essential contradictions. Yet there can be no doubt that this illiterate and half-barbarous Arab had a great and wonderful mind—a mind which has proved one of the most potent forces in human history.

We shall presently let the Koran say something for itself, but in the meantime the following estimate of it by an acute and able historian may be of interest :—

In philosophy it is incomparably inferior to the writings of Sakya Mouni, the founder of Buddhism; in its science it is absolutely worthless. On speculative or doubtful things it is copious enough; but in the exact, where a test can be applied to it, it totally fails. Its astronomy, cosmogony, physiology, are so puerile as to invite our mirth, if the occasion did not forbid. They belong to the old times of the world, the morning of human knowledge. The earth is firmly balanced in its seat by the weight of the mountains; the sky is supported over it like a dome, and we are instructed in the wisdom and power of God by being told to find a crack in it if we can. Ranged in stories seven in number are the heavens, the highest being the habitation of God, whose throne—for the Koran does not reject Assyrian ideas—is sustained by winged animal forms. The shooting stars are pieces of red-hot stone thrown by angels at impure spirits when they approach too closely. Of God the Koran is full of praise, setting forth, often in not unworthy imagery, his majesty. Though it bitterly denounces those who give him any equals, and assures them that their sin will never be forgiven; that in the judgment day they must answer the fearful question, "Where are my companions about whom ye disputed?" though it inculcates an absolute dependence on the mercy of God, and denounces as criminals all those who make a merchandise of religion, its ideas of the Deity are altogether anthropomorphic. He is only a gigantic man living in a paradise. In this respect, though exceptional passages might be cited, the

reader rises from a perusal of the 114 chapters of the Koran with a final impression that they have given him low and unworthy thoughts; nor is it surprising that one of the Mohammedan sects reads it in such a way as to find no difficulty in asserting that "from the crown of the head to the breast God is hollow, and from the breast downward he is solid; that he has black curled hair, and roars like a lion at every watch of the night.....As to man, Mohammed is diffuse enough respecting a future state, speaking with clearness of a resurrection, the judgment-day, Paradise, the torment of hell, the worm that never dies, the pains that never end; but with all this precise description of the future there are many errors as to the past."

Comparing the literary merits of the Koran with those of the Bible, the former must be admitted to reach a lower degree of excellence :—

Its most celebrated passages, as those on the nature of God in chapters ii. and xxiv., will bear no comparison with parallel ones in the Psalms and Book of Job. In the narrative style the story of Joseph in chapter xii., compared with the same incidents related in Genesis, shows a like inferiority. Mohammed also adulterates his work with many Christian legends, derived probably from the apocryphal gospel of St Barnabas; he mixes with many of his own inventions the scripture account of the temptation of Adam, the Deluge, Jonah and the whale, enriching the whole with stories like the later Night Entertainments of his country, the Seven Sleepers, Gog and Magog, and all the wonders of genii, sorcery, and charms.²

The Koran, however, has a better side; indeed, it could hardly have exerted so vast an influence on the life of humanity if it were devoid of the purer elements of religion. We cannot fully agree with Professor Draper when he says: "The Koran abounds in excellent moral suggestions and precepts; its composition is so fragmentary that we cannot turn to a single page without finding maxims of which all men must approve." The moral element in the Koran is disproportionately slender, and is well nigh lost amid the storm of threats and denunciations, the lurid pictures of the future state, the imperfect views of God, which betray its origin with sufficient clearness. Still, it is true

¹ Draper's *Intellectual Development of Europe*, vol. i., p. 242.

² *Ibid.*, p. 343.

that "there is a perpetual insisting on the necessity of prayer, an inculcation of mercy, almsgiving, justice, fasting, pilgrimage, and other good works; institutions respecting conduct, both social and domestic, debts, witnesses, marriage, wine, and the like; above all, a constant stimulation to do battle with the infidel and blasphemer."¹

No religion more faithfully reflects the conditions amid which it arose than does Islam. Springing from a personal founder, it naturally partakes of his character; its indebtedness to Judaism is plainly manifest; while the influence of the old Arab polytheism is perceptible in many of the inferior elements already mentioned. A vigorously monotheistic idea of God—religious sincerity of the intensest nature, the assiduous inculcation of good works, and an admirable breadth of toleration for the great and earnest of other faiths, are some of the chief merits of Mohammed's creed. An inability to rise beyond the current semi-barbarous notions of moral and spiritual truth, and the stereotyping of those conceptions in a fixed and inflexible system which has encouraged a violent bigotry and shown itself practically incapable of further progress, are the leading drawbacks of the Mohammedan faith.

The Mohammedans divide their religion into two distinct parts: *Imân*—i.e., faith or theory; and *Din*—i.e., religion or practice; and teach that it is built on five fundamental points, one belonging to faith and the other four to practice.²

The first is the confession of faith that "there is no God but the true God, and that Mohammed is his prophet." Under this head are comprehended six distinct branches—viz.:—

1. Belief in God.
2. In his angels.
3. In his scriptures.
4. In his prophets.

5. In the resurrection and day of judgment.
6. In God's absolute decree and pre-determination of both good and evil.³

The four points relating to practice are:—

1. Prayer, under which are comprehended those washings or purifications which are necessary preparations required before prayer.
2. Alms.
3. Fasting; and
4. The Pilgrimage to Mecca.²

Of these duties the Caliph Omar II. said that prayer carried the believer half way to God; fasting brought him to his door, and alms gained him admission.

Prayer is enjoined five times during the twenty-four hours:—

1. In the morning before sunrise.
2. When noon is past, and the sun begins to decline from the meridian.
3. In the afternoon before sunset.
4. In the evening after sunset, and before day be shut in; and
5. After the day is shut in, and before the first watch of the night.³

Although great importance is attached to the regular performance of this duty, what is principally to be regarded, say the Moslem doctors, is the inward disposition of the heart, which is the life and spirit of prayer; the most punctual observance of the external rites and ceremonies being of little or no avail, if performed without due attention, reverence, devotion, and hope.⁴ The following passage from the Koran emphasizes this higher aspect of religious duty:—

It is not righteousness that ye turn your faces in prayer towards the east and the west, but righteousness is of him who believeth in God and the last day, and the angels, and the Scriptures, and the prophets; who giveth money for God's sake unto his kindred and unto orphans, and the needy and the stranger, and those who ask, and for redemption of captives; who is constant at prayer and giveth alms; and of those

¹ Draper's *Intellectual Development of Europe* p. 344.

² Sale's *Koran*, Preface, sec. 4.

³ Sale's Preface, sec. 4.

⁴ *Ibid.*

² *Ibid.*

³ *Ibid.*

who perform their covenant when they have covenanted, and who behave themselves patiently in adversity and hardships and in time of violence: these are they who are true, and these are they who fear God.¹

The Koran gives no set forms of prayer, but the first of the following passages might serve as such, and is one of the most favourable specimens:—

God will not force any soul beyond its capacity; it shall have the good which it gaineth, and it shall suffer the evil which it gaineth. O Lord, punish us not if we forget or act sinfully. O Lord, lay not on us a burden like that which thou hast laid on those who have been before us;² neither make us, O Lord, to bear what we have not strength to bear, but be favourable unto us, and spare us, and be merciful unto us.³

O my son, be constant at prayer, and command that which is just, and forbid that which is evil; and be patient under the afflictions which shall befall thee; for this is a duty absolutely incumbent on all men. Distort not thy face out of contempt for men, neither walk in the earth with insolence; for God loveth no arrogant, vainglorious person. And be moderate in thy pace and lower thy voice; for the most ungrateful of all voices surely is the voice of asses.⁴

Observe the stated times of prayer, and pay the legal alms; and lend unto God an acceptable loan; for whatever good ye send before for your souls ye shall find the same with God. This will be better, and will merit a greater reward. And ask God forgiveness; for God is ready to forgive and merciful.⁵

Regularly perform thy prayer at the declension of the sun, at the first darkness of the night, and the prayer of daybreak; for the prayer of daybreak is borne witness unto by the angels. And watch some part of the night in the same exercise, as a work of supererogation for thee; peradventure thy Lord will raise thee to an honourable station.....Pronounce not thy prayer aloud, neither pronounce it with too low a voice, but follow a middle way between these; and say, Praise be unto God, who hath not begotten any child; who hath no partner in the kingdom, nor hath any to protect him from contempt; and magnify him by proclaiming his greatness.⁶

Charity in the form of alms is a great point in the faith of Islam. Alms are of two sorts, legal and voluntary. The former, represented by the taxes paid to the State, are of indispensable obli-

tion, being commanded by the law, which directs and determines both the portion which is to be given and of what things it ought to be given. The voluntary alms, which usually take the form of distributing food to the poor, are left to everyone's liberty, to give more or less, as he shall see fit. The Mohammedan law prescribes that alms are to be given of cattle, money, corn, fruits, and wares sold. Two and a half per cent. of the value is the customary proportion, but none is payable unless the value reaches a certain amount, nor until the twelfth month of possession is begun; nor are alms due for cattle employed in tilling the ground, or in carrying burdens. Many Mohammedans have rendered themselves illustrious by almsgiving. Hassan, the grandson of the prophet, is related to have thrice in his life divided his substance equally between himself and the poor, and twice to have given away all he had; and the generality of Moslems are so addicted to the doing of good that they extend their charity even to brutes.¹

Many injunctions to almsgiving, usually joined with those to prayer, occur in the Koran. The following passages are illustrations:—

Give unto him who is of kin to thee his reasonable due; and also to the poor and the stranger: this is better for those who seek the face of God; and they shall prosper. Whatever ye shall give in usury, to be an increase of men's substance, shall not be increased by the blessing of God; but whatever ye shall give in alms, for God's sake, they shall receive a twofold reward.²

They will ask thee what they shall bestow in alms. Answer, the good which ye bestow, let it be given to parents, and kindred, and orphans, and the poor, and the stranger.³

Alms are to be distributed only unto the poor and the needy, and those who are employed in collecting and distributing the same, and unto those whose hearts are reconciled, and for the redemption of captives, and unto those who are in debt and insolvent, and for the advancement of God's religion, and unto the traveller. This is an ordinance from God, and God is knowing and wise.⁴

They will ask thee concerning wine and lots.

¹ Koran, c. ii.

² An allusion to the onerous observances of the Jews.

³ Koran, c. ii.

⁴ *Ibid.*, c. lxxiii.

⁵ *Ibid.*, c. xxxi.

⁶ *Ibid.*, c. xvii.

¹ Sale's Preface, sec. 4.

² *Ibid.*, c. ii.

³ Koran, c. xxx.

⁴ *Ibid.*, c. ix.

Answer, In both there is great sin, and also some things of use unto men; but their sinfulness is greater than their use. They will ask thee also what they shall bestow in alms; answer, What ye have to spare. Thus God sheweth his signs unto you, that peradventure ye might seriously think of this present world and of the next. They will also ask thee concerning orphans; answer, To deal righteously with them is best; and if ye intermeddle with the management of what belongs to them, do them no wrong; they are your brethren.¹

Ye will never attain unto righteousness until ye give in alms of that which ye love.²

The believer is directed to be charitable without ostentation :—

Alms given in secret atone for sins, and shall have their reward.³

Almsgiving, being looked upon by the conscientious Moslem as securing an immediate good to the recipient as well as his blessing and prayers, is practised by many who neglect much of the orthodox ceremonial of Islam.⁴

Fasting is a duty of so great moment that Mohammed used to say it was "the gate of religion." It comprehends three degrees :—

1. The restraining the natural appetites of the body.
2. The restraining the ears, eyes, tongue, hands, feet, and other members from sin; and
3. The fasting of the heart from worldly cares, and refraining the thoughts from everything besides God.⁵

O true believers, a fast is ordained you, as it was ordained unto those before you, that ye may fear God. A certain number of days shall ye fast; but he among you who shall be sick, or on a journey, shall fast an equal number of other days. And those who can keep it, and do not, must redeem their neglect by maintaining of a poor man. And he who voluntarily dealeth better with the poor man than he is obliged, this shall be better for him. But if ye fast, it shall be better for you, if ye knew it. The month of Ramadan shall ye fast, in which the Koran was sent down from heaven, a direction unto men, and declarations of direction, and the distinction between good and evil.⁶

During each day of the month of Ramadan the Moslems keep a strict fast from daybreak till sunset. At night, however, they are allowed to eat and drink their fill, until, in the words of the Koran, they "can plainly distinguish a white thread from a black thread by the daybreak." So strictly is the fast kept that it is considered to be broken by bathing, by the smelling of perfume; and, among the severer ascetics, by opening the mouth to speak, thereby breathing the air too freely. This fast involves no slight hardship during the long days of the hot Arabian summer, but it is mitigated in the case of travellers, sick persons, including all whose health would be injured by fasting, expectant mothers, old persons, and young children. All are obliged, however, when they become able, to fast an equal number of other days; and the breaking of the fast is ordered to be expiated by giving alms to the poor.

The pilgrimage to Mecca is so necessary a point of practice that, according to a tradition of Mohammed, he who dies without performing it may as well die a Jew or a Christian.⁷ The following are among the terms in which it is enjoined in the Koran :—

Perform the pilgrimage of Mecca, and the visitation of God; and if ye be besieged, send that offering which shall be easiest.....The pilgrimage must be performed in the known months.....Make provision for your journey; but the best provision is piety.⁸

Proclaim unto the people a solemn pilgrimage; let them come unto thee on foot and on every lean camel, arriving from every distant road; that they may be witnesses of the advantages which accrue to them from visiting this holy place, and may commemorate the name of God on the appointed days, in gratitude for the brute cattle which he hath bestowed on them. Wherefore eat thereof, and feed the needy and the poor. Afterwards let them put an end to the neglect of their persons; and let them pay their vows, and compass the ancient house. This let them do. And whoever shall regard the sacred ordinances of God, this will be better for him in the sight of his Lord.⁹

The scrupulous cleanliness of the

¹ *Ibid*, c. ii.

² *Ibid*, c. iii.

³ Stobart, *Islam and its Founder*, p. 194.

⁴ *Ibid*, p. 195. ⁵ Sale's Preface, sec. 4.

Koran, c. ii.

⁷ Sale's Preface, sec. 4.

⁸ Koran, c. ii.

⁹ *Ibid*, c. xxii.

Moslems is an honourable feature in their faith. The prophet is said to have declared that "the practice of religion is founded on cleanliness," and a commentator has reckoned among the degrees of purification the cleansing of the heart from blameable inclinations, and the purging from one's thoughts all affections which may divert them from God.¹

It will be seen that the essential and positive doctrines of Islam are few and simple. Its negative precepts deal with the ordinary offences against social well-being—in a somewhat barbarous spirit, it is true, but not without occasional gleams of humane feeling. Theft is sternly punished: "If a man or woman steal, cut off their hands."² The old Jewish law of exact retribution is retained: "An eye for an eye, a tooth for a tooth, and a life for a life." Whether such laws are a wholesome restraint on evil is to be decided rather by the requirements of civil society than by religious enactments. Adultery is punishable either by imprisonment for life or by death, but the care to be taken in obtaining proof of the offence, no less than four witnesses being required, renders the crime almost unknown; and the liberty of the male Moslem to have four wives practically confines it to the female sex. The severe beating awarded to a false accusation is also calculated to reduce the number of charges. A text condemning gambling and the use of intoxicating liquors has already been quoted. Murder is forbidden; the punishment, if the victim be a believer, is declared to be "Hell-fire for ever," and presumably the criminal is put to death as the speediest means of qualifying him for its torments. The law of strict retaliation holds good, and it is only when there are extenuating circumstances that the death penalty is not inflicted. In such cases the crime may be commuted by payment of a fine to the family of the

slain person. The latter's representatives are not allowed to torture the criminal to death, or to exceed a fitting punishment. Unintentional homicide is gently dealt with; the culprit may, according to the circumstances of the case, expiate his offence by freeing a believer from captivity, fasting two months, or paying a sufficient fine to the family of the victim. Unintentional wounds are usually punished by infliction of a carefully-graduated money fine.³

The distribution of property by will is regulated by the Koran; a man is not allowed to will away from his family more than one-third of his estate, the remainder being divided between his relatives in fixed proportions, and the interests of women and children being duly protected.

As will be seen, the severity of many of the Mohammedan laws is mitigated by a spirit of reason and humanity which must be considered remarkable, taking into account the character of the time in which Mohammed lived; it was certainly an advance upon the legislation of Europe at the same epoch. Theft, for instance, is a venial offence if committed to satisfy the cravings of hunger. Unfortunate debtors are treated with great leniency. If the prospect of payment is almost hopeless, the creditor is recommended to remit the debt as alms.⁴ Insolvency and inability to work in order to discharge the claim cancel all further obligation.⁵ At the same time, the Koran emphatically enjoins the most conscientious fulfilment of all private contracts. Usury is condemned, and this is understood to apply to the taking of interest for money. "Truly selling is but as usury, and yet God hath permitted selling and forbidden usury."⁶

The following passage, advocating a

¹ Chambers's *Encyclopædia*, art. "Mohammedanism."

² Koran, c. ii.

³ Chambers's *Encyclopædia*, art. "Mohammedanism."

⁴ Koran, c. ii.

⁵ Rev. J. H. Stobart, *Islam and its Founder*, p. 195.

⁶ Sale's Preface, sec. 4.

written record of debts, contains a very shrewd touch at the end :—

O true believers, when ye bind yourselves one to the other in a debt for a certain time, write it down..... But if he who owneth the debt be foolish, or weak, or be not able to dictate himself, let his agent dictate according to equity; and call to witness two witnesses of your neighbouring men; but if there be not two men, let there be a man and two women of those whom ye shall choose for witnesses; if one of those women should mistake, the other of them will cause her to recollect.¹

The prophet's simple life led him to reprove anxiety to multiply riches, especially if foul means be employed. "Woe to every slanderer and backbiter who heapeth up riches and thinketh they can render him immortal. He shall surely be cast into hell."²

In reading the Koran we frequently meet with the assertion that in the day of judgment "one soul shall not be able to obtain anything on behalf of another soul";³ "no soul shall acquire any merits or demerits but for itself; and no burdened soul shall bear the burden of another."⁴ This is viewed by a Christian writer as amounting to "a direct denial of the Redemption,"⁵ though the greatest of the Apostles has expressed the same idea in almost identical language: "Every man shall bear his own burden." To the Rationalist it would seem that, if the theory of individual responsibility is true, it is well to hold it consistently. "Hereditary taint from the Fall is nowhere admitted. Adam fell, it is true, by eating the forbidden fruit; but his fall (as it would appear) was the consequence, not the cause, of the proneness of his nature to sin. All men have sinned, but it has been each his own fault, acting independently, and not because of anything antecedent."⁶

While it can hardly be denied that, on the whole, the influence of the Koran has been prejudicial to the position of women, it is only fair to remark that

Islam should not be too hastily condemned for this. Some of the special features of Moslem ethics are clearly the product of Oriental habits of life, and it should not be assumed that those habits are of necessity immoral because foreign to our own. As Sir William Muir points out: "The Corân not only denounces any illicit laxity between the sexes in the severest terms, but exposes the transgressor to condign punishment. For this reason, and because the conditions of what is licit are so accommodated, and wide, a certain negative virtue (it can hardly be called continence or chastity) pervades Mohammedan society, in contrast with which the gross and systematic immorality in certain parts of every European community may be regarded by the Christian with shame and confusion. In a purely Mohammedan country, however low may be the general level of moral feeling, the still lower depths of fallen humanity are comparatively unknown."⁷

Though we have not space in which to offer any further estimate of Mohammed's character, we may quote the judicious words in which Dr. Weil expresses his view of the founder of Islam :—

As a reformer (which Mohammed originally was, and desired to be) he is entitled to our unqualified recognition and admiration. An Arab who could lay bare the defects of the prevailing Judaism and Christianity, and, not without risk to his life, sought to destroy Polytheism, and implant among his people the doctrine of the immortality of the soul, deserves not merely a place by the side of the greatest men in history; more than that, he merits the name of Prophet. But, as soon as he ceased to be tolerant, so soon as he sought to gain victory for the truth by means of secret assassination and open war, and put forth in the name of the Almighty a new code of political, ceremonial, civil, police, and criminal law, he impressed on himself and on his utterances the stamp of human weakness and decay.⁸

An interesting anecdote which furnished the occasion for a chapter in the Koran, and reveals the essential nobility of the Prophet's nature, may here be

¹ *Koran*, c. ii.

² *Ibid*, c. civ.

³ *Ibid*, c. lxxxiii.

⁴ *Ibid*, c. vi.

⁵ Stobart, *Islam*, p. 92.

⁶ Sir W. Muir, *The Corân* (S.P.C.K.), p. 54.

⁷ Muir's *Corân*, p. 61.

⁸ *Ibid*, p. 63.

inserted. He was once engaged in conversation with some rich and powerful persons, when a blind man approached, and requested to be taught about God. Mohammed was annoyed at the interruption, and turned away without making any reply. On reflection he perceived his error, and in the sura entitled "He Frowned" rebukes himself thus:—

The prophet frowned and turned aside, because the blind man came unto him; and how dost thou know whether he shall peradventure be cleansed from his sins, or whether he shall be admonished, and the admonition shall profit him? The man who is wealthy thou receivest respectfully; but he who cometh unto thee earnestly seeking his salvation, and who feareth God, dost thou neglect. By no means shouldst thou act thus.¹

Mohammed afterwards showed the blind man great kindness and respect, and on two occasions made him Governor of Medina.²

The rights of women and children are not defined by Mohammedan law in such a way as to provide for all possible contingencies; the Koran rather enjoins obedience to general principles, which, if faithfully followed, are probably sufficient for most practical purposes.

The following passages from the Koran are adduced as further illustrations of its ethical character:—

Thou shalt admonish those who fear their Lord in secret, and are constant at prayer; and whoever cleanseth himself from the guilt of disobedience, cleanseth himself to the advantage of his own soul; for all shall be assembled before God at the last day. The blind and the seeing shall not be held equal; neither darkness and light; nor the cool shade and the scorching wind; neither shall the living and the dead be held equal.³.....Thou art⁴ no other than a preacher; verily we have sent thee with truth, a bearer of good tidings, and a denouncer of threats.⁵

Your wealth and your children are only a temptation; but with God is a great reward. Wherefore fear God, as much as ye are able; and hear, and obey; and give alms, for the good of your souls; for whoso is preserved from the

covetousness of his own soul, they shall prosper. If ye lend unto God an acceptable loan, he will double the same unto you, and will forgive you; for God is grateful and long-suffering, knowing both what is hidden and what is divulged; the Mighty, the Wise.¹

Woe be unto those who give short measure or weight; who, when they receive by measure from other men, take the full; but when they measure unto them, or weigh unto them, defraud! Do not these think they shall be raised again at the great day, the day whereon mankind shall stand before the Lord of all creatures?²

Ye honour not the orphan, neither do ye excite one another to feed the poor; and ye devour the inheritance of the weak, with undistinguishing greediness; and ye love riches with much affection. By no means should ye do thus.³

If a woman fear ill-usage or aversion from her husband, it shall be no crime in them if they agree the matter amicably between themselves, for a reconciliation is better than a separation. (Chap. iv.)

O true believers, observe justice when ye bear witness before God, although it be against yourselves, or your parents, or relations, whether the party be rich or whether he be poor, for God is more worthy than them both: therefore, follow not your own lust in bearing testimony so that ye swerve from justice. (*Ibid.*)

Invite men unto the way of thy Lord by wisdom and mild exhortation; and dispute with them in the most condescending manner: for thy Lord well knoweth him who strayeth from his path, and he well knoweth those who are rightly directed. If ye take vengeance on any, take a vengeance proportionable to the wrong which hath been done you; but if ye suffer wrong patiently, verily this will be better for the patient. (Chap. xvi.)

Thy Lord hath commanded that ye worship none besides him; and that ye show kindness unto your parents, whether the one of them or both of them attain to old age with thee. Wherefore say not unto them, Fie on you! neither reproach them, but speak respectfully unto them; and submit to behave humbly toward them, out of tender affection, and say, O Lord, have mercy on them both, as they nursed me when I was little. (Chap. xxvii.)

Whoso striveth to promote the true religion striveth for the advantage of his own soul, for God needeth not any of his creatures; and as to those who believe and work righteousness, we will expiate their evil deeds from them; and we will give them a reward according to the utmost merit of their actions. (Chap. xxix.)

Verily the true believers are brethren: wherefore reconcile your brethren; and fear God,

¹ Koran, c. lxxx.

² Sale's *Koran*, p. 437, note.

³ These terms stand for the true believers and the infidels respectively.

⁴ *I.e.*, Mohammed.

⁵ Koran, c. xxxv.

¹ Koran, c. lxiv.

² *Ibid.*, c. lxxxiii.

³ *Ibid.*, c. lxxxix.

that ye may obtain mercy. O true believers, let not men laugh other men to scorn, who peradventure may be better than themselves; neither let women laugh other women to scorn, who may possibly be better than themselves. Neither defame one another; nor call one another by opprobrious appellations. An ill name it is to be charged with wickedness, after having embraced the faith: and whoso repenteth not, they will be the unjust doers. O true believers, carefully avoid entertaining a suspicion of another: for some suspicions are a crime. Inquire not too curiously into other men's failings: neither let the one of you speak ill of another in his absence. (Chap. xlix.)

Serve God, and associate no creature with him; and show kindness unto parents, and relations, and orphans, and the poor, and your neighbour who is of kin to you, and also your neighbour who is a stranger, and to your familiar companion, and the traveller, and the captives whom your right hands shall possess. (Chap. xiv.)

God commandeth you to restore what ye are trusted with to the owners; and when ye judge between men, that ye judge according to equity; and surely an excellent virtue it is to which God exhorteth you. (*Ibid.*)

Observe justice when ye appear as witnesses before God, and let not hatred towards any induce you to do wrong; but act justly: this will approach nearer unto piety. (Chap. v.)

Strive to excel each other in good works. (*Ibid.*)

Evil and good shall not be equally esteemed of, though the abundance of evil pleaseth thee. (*Ibid.*)

The following passages are extracted from Rodwell's translation, in which the suras are arranged as nearly as possible in the order of their appearance:—

Adopt a placable method; and enjoin what is just, and withdraw from the ignorant. (Chap. vii.)

Fear God with all your might, and hear and obey; and expend in alms for your soul's weal, for whoso is saved from his own greed shall prosper. (Chap. lxiv.)

To those of your slaves who desire a deed of manumission, execute it for them if ye know good in them, and give them a portion of the wealth of God which he hath given you. (Chap. xxiv.)

Woe then to those who pray,
But in their prayer are careless,
Who make a show of devotion,
But refuse help to the needy.

(Chap. cvii.)

Your Lord well knoweth what is in your soul; he knoweth whether ye be righteous; And verily gracious is he to those who return to him in obedience;

And to him who is of kin render his due, and also to the poor and to the wayfarer; yet waste not wastefully. (Chap. xvii.)

Touch not the substance of the orphan unless in an upright way till he attain his age of strength; and perform your covenant. Verily the covenant shall be inquired of;

And give full measure when you measure; and weigh with just balance; this will be better and fairest for settlement.....And walk not proudly on the earth: truly thou canst by no means cleave the earth, neither canst thou reach to the mountains in height. (*Ibid.*)

Very prominent in the Koran is the idea that just conduct will receive an ample reward hereafter:—

As to him who believeth and doeth, he shall have a generous recompense. (Chap. xviii.)

No soul knoweth what joy of the eyes is reserved for the good in recompense of their works. (Chap. xxxii.)

On the other hand, the "unbelievers shall taste a terrible punishment," and be recompensed "according to the worst of their actions" (c. xli.), which is a little severe.

Wife and children are the adornment of this present life; but good works which are lasting are better in the sight of thy Lord as to recompense, and better as to hope. (Chap. xviii.)

The idea of personal responsibility is strictly preserved:—

He who doeth right it is for himself; and he that doeth evil it is for himself (c. xli.).

For his own good only shall the guided yield to guidance, and to his own loss only shall the erring err, and the heavy laden shall not be laden with another's load. (Chap. xvii.)

The following passage recalls Cromwell's advice to his Ironsides to "Pray to God, but keep your powder dry":—

When ye march to war in the earth, it shall be no harm in you if ye shorten your prayers, in case ye fear the infidels may attack you; for the infidels are your open enemy. But when thou, O prophet, shalt be among them, and shalt pray with them, let a party of them arise to prayer with thee, and let them take their arms; and when they shall have worshipped let them stand behind you, and let another party come that hath not prayed, and let them pray with thee, and let them be cautious and take their arms.

The 93rd sura, which follows in its entirety, is perhaps the most beautiful in the Koran:—

By the brightness of the morning; and by the

night when it groweth dark : thy Lord hath not forsaken thee, neither doth he hate thee. Verily, the life to come shall be better for thee than this present life : and thy Lord shall give thee a reward wherewith thou shalt be well pleased. Did he not find thee an orphan, and hath he not taken care of thee ? And did he not find thee wandering in error, and hath he not guided thee into the truth ? And did he not find thee needy, and hath he not enriched thee ? Wherefore oppress not the orphan ; neither repulse the beggar ; but declare the goodness of thy Lord.¹

The following passage also forms a complete chapter :—

By the war-horses which run swiftly to the battle, with a panting noise ; and by those which strike fire, by dashing their hoofs against the stones ; and by those which make a sudden incursion on the enemy early in the morning, and therein raise the dust, and therein pass through the midst of the hostile troops : verily man is ungrateful unto his Lord ; and he is witness thereof : and he is immoderate in the love of worldly good. Doth he not know, therefore, when that which is in the grave shall be taken forth, and that which is in men's breasts shall be brought to light, that their Lord will, on that day, be fully informed concerning them.²

The last sura that we shall quote

consists of only twenty-four English words, yet it is reckoned by Mohammedans themselves to be equal in value to a third part of the whole Koran. As it has no concern with practical ethics, that judgment will hardly be endorsed by the English reader :—

Say, God is one God ; the eternal God : he begetteth not, neither is he begotten : and there is not any one like unto him.¹

Generally, with regard to the ethical features of Islam, we may say that “injustice, falsehood, pride, revengefulness, calumny, mockery, avarice, prodigality, debauchery, mistrust, and suspicion are inveighed against as ungodly and wicked ; while benevolence, liberality, modesty, forbearance, patience, and endurance, frugality, sincerity, straightforwardness, decency, love of peace and truth, and, above all, trusting in God and submitting to his will, are considered as the pillars of true piety and the principal signs of a true believer.”²

¹ Koran, c. cxii.

² Chambers's *Encyclopædia*, art. “Mohammedanism.”

¹ Koran, c. xciii.

² *Ibid*, chap. c.

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SCIENCE AND SPECULATION

PREFATORY NOTE

THE following is a reprint, under a new and—it is believed—appropriate title, of the Prolegomena to George Henry Lewes's *History of Philosophy* (3rd edition). It has only been necessary to make a few verbal alterations to fit the essay for separate publication; since, on the whole, it is a self-contained treatise, distinct from the History and representing the philosophy of modern science, as interpreted by Lewes himself.

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SCIENCE AND SPECULATION

BY

G. H. LEWES,

AUTHOR OF "THE HISTORY OF PHILOSOPHY," ETC.

(ISSUED FOR THE RATIONALIST PRESS ASSOCIATION, LIMITED)

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SCIENCE AND SPECULATION

I.—WHAT IS PHILOSOPHY?

§ 1. THEOLOGY, Philosophy, and Science constitute our spiritual triumvirate. The limits of their several dominions have been insensibly shifting, so that at various epochs in History they have been of very varied importance. For centuries the predominance of Theology was absolute and undisputed. Philosophy, meanwhile, grew apace, till at last it was enabled to assert an independent position; and while these two rivals struggled for supremacy, Science was also quietly and obscurely feeling its way to independence.

§ 2. The office of Theology is now generally recognised as distinct from that of Philosophy and from that of Science. Its ancient claim to authority over all regions of inquiry has long been felt to be untenable, and has been frankly relinquished. Although claiming to hold the keys of the highest Truth, it nevertheless no longer pretends to decide upon the lower, but confesses its inability to furnish Research with effective Methods, or Knowledge with available data. It restricts itself to the region of Faith, and leaves to Philosophy and Science the region of Inquiry. Its main province is the province of Feeling; its office is the *systematisation of our religious conceptions*.

This is the office not of one Theology, but of all. No matter what other functions the various Theologies may assume,

they invariably assume this, and give it pre-eminence. It is thus not only their common characteristic, but also their highest characteristic; and now that the course of human evolution has detached both Philosophy and Science from Theology, this systematisation remains its sole function.

§ 3. The office of Science is distinct. It may be defined as the *systematisation of our knowledge of the order of phenomena considered as phenomena*. It co-ordinates common knowledge. It explains the order of phenomena, by bringing them under their respective laws of co-existence and succession, classing particular facts under general conceptions.

§ 4. The office of Philosophy is again distinct from these. It is the *systematisation of the conceptions furnished by Theology and Science*. It is *ἐπιστήμη ἐπιστημῶν*. As Science is the systematisation of the various generalities reached through particulars, so Philosophy is the systematisation of the generalities of generalities. In other words, Science furnishes the Knowledge, and Philosophy the Doctrine.

Each distinct science embraces a distinct province of knowledge. Mathematics treats of magnitudes, and disregards all other relations; Physics and Chemistry concern themselves with the changes of inorganic bodies, leaving all vital relations to Biology; Sociology

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concerns itself with the relations of human beings among each other, and with their relations to human beings in the past and in the future. But Philosophy has no distinct province of knowledge: it embraces the whole world of thought: it stands in the same relation to the various sciences as Geography stands to Topography. All the sciences subserve its purpose, furnish its life-blood. It systematises their results, co-ordinating their truths into a body of Doctrine.

Thus, while Theology claims to furnish a system of religious conceptions, and Science to furnish conceptions of the order of the world, Philosophy, detaching their widest conceptions from both, furnishes a Doctrine which contains an *explanation of the world and of human destiny*.

Although this may appear a novel definition, it will, on examination, be found to characterise the persistent function which in all times Philosophy has exercised. Moreover, it will be found applicable in special cases, such as the philosophy of Science, the philosophy of Religion, the philosophy of History, or the philosophy of Art. Thus, given a science with its generalities laboriously ascertained, the philosophy of that science will be the co-ordination of its highest truths, the methods by which those truths were reached, and the relation which both these bear to the truths and methods of other sciences. I formerly defined Philosophy "an attempt to explain the phenomena of the universe." This is too vague, and fails to mark the point of separation from Science and Theology; but, though vague, it expresses what has been the unconscious and persistent effort of philosophical speculation.

§ 5. Such is the relative position of each of the three great spiritual powers at the present time. These positions were not always thus sharply defined, but the history of thought exhibits a continuous development in these directions. Theology at first was absolute and autocratic, not only furnishing religious doctrine, but dictating generalities to Philosophy, and explanations of all but the commonest phenomena to Science. Philosophy served as a hand-maid to Theology, until she grew strong enough to think for herself. Science kept timidly aloof from all questions on which Theology had pronounced, and submitted to a peremptory order to be silent when her conclusions were unacceptable. Fortunately for Humanity, this creeping servitude was incompatible with the continued exercise of reason. As discoveries extended, as more and more phenomena were satisfactorily reduced to order, the widening reach of Inquiry embraced problem after problem, until now all the facts within human ken are assumed to be reducible to order on the scientific Method. With the growing strength came a growing courage, and timidity gave place to a proud self-reliance. Theology was first quietly yet firmly excluded from Cosmology, its explanations of the world being set aside as myths; then it was excluded from Biology; and now even Sociology is claimed as amenable to scientific Methods, because all social phenomena are seen to be under the dominion of law. History shows a curious reversal of the principle of accommodation. Just as Science was formerly compelled to accommodate its conclusions to Theology, no matter at what cost of consistency, with what sophistical excuses, so Theology is now

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compelled to accommodate its dicta to the conclusions of Science, by utterly distorting the meaning of words. After having for centuries pursued its researches under the denunciation of Theology, and under the burden of a fear, terrible to delicate consciences, of approaching heresy when it was seeking truth, Science has at length ceased its timorous and futile efforts to reconcile its conclusions with anything but its own principles.¹ The problem is no longer : Given a doctrine of indisputable authority, how to reconcile the conclusions of Experience with its dicta ; the problem is : Given certain indisputable conclusions of Experience, how to reconcile the dicta of an ancient doctrine with these irresistible conclusions.²

§ 6. The conflict was inevitable, and was foreseen from the first. Inevitable, because the two powers are characterised by two different Methods, that of Theology being the Subjective, that of Science the Objective. These Methods will have to be considered more particularly in a future section ; for the present, I merely call attention to the fact of their opposition, and to the fact that

Philosophy occupying an intermediate position has necessarily employed both Methods by turns. When it was in alliance with Theology, it adopted the Subjective Method : this was during its ontological phase. When the advance of Science furnished it with more and more material, Philosophy gradually detached itself more and more from Theology, without, however, consciously and completely adopting the Objective Method : this was its psychological phase. Finally, the all-embracing progress of Science has forced Philosophy frankly to adopt the Objective Method : this is its present phase, the Positive Philosophy.

The history of Philosophy is the narrative of its emancipation from Theology and its final constitution through the transformation of Science.

§ 7. The annals are red with the flames of persecuting wrath at every attempt Philosophy made to assert independence. Naturally enough. No autocrat can be lenient to a powerful pretender ; and the more reasonable the pretender's claim, the more hateful will be its assertion. Philosophy, in turn, was equally intolerant of its rival Science, and allied itself with its ancient persecutor to persecute the new pretender.

Aloof from the strife of polemics and personal irritations, the wise, calm spirits of our day resign themselves to the Triumvirate, defining for each its separate province, and trusting in harmony of combined effort which hitherto has been impossible. It is time that the great perturbations should cease, and the only struggles be carried on within the limits of each domain : theologians in controversy with theologians, savans with savans, philosophers with philosophers. The three powers

¹ In 1864 was seen a memorable protest, on the part of scientific men, against every attempt to control their researches. In spite of the theological pressure, which is so powerful in England, our leading savans openly and *indignantly* refused to sign a declaration of dependence.

² A somewhat analogous inversion has taken place in the social problem. Formerly the problem was : Given the welfare and advantages of the Few, how best to reconcile with these the welfare of the Many ; it now is : Given the welfare of the Many, how best to secure the advantages of the Few. The new Astronomy transferred the centre of the world from the small Earth to the mighty Sun ; the new Sociology transfers the centre of social life from the small group of Idlers to the mighty mass of Workers.

have always hitherto been in a state of conflict or of armed peace. The problem of our age is, how to change this conflict into a concourse, to unite the independent and dissident efforts in dependent and harmonious efforts. This problem may be solved by the transformation of Science into Philosophy, and by the transformation of Philosophy into Religion. But whether we reject or accept that solution, the systematisation of our religious conceptions and all its practical applications must be a distinct office from the systematisation of our conceptions of the order of phenomena; and the harmony of the two can only be effected by a Doctrine which combines the generalities of both. The future of Philosophy is in this task of reconciliation.

§ 8. In the early editions of my *History* the word Philosophy carried a more restricted meaning than is assigned to it in the preceding paragraphs. It was used as synonymous with Metaphysics, or more specially with Ontology. That restricted use of the word was forced on me by the practice of all previous historians, and I stated why it was forced upon me, and in what sense the word was to be understood. In vain. The old vague, indissoluble associations could not be escaped. The reader quickly forgot my explanation, and interpreted the word in his vague sense, instead of in my restricted sense. The large latitude in which the word has come to be used all over Europe has obliterated all special meaning, and this notably in England, where, as Hegel sarcastically remarks, microscopes and barometers are dignified as "philosophical instruments," Newton is styled a philosopher, and even parliamentary

proceedings are sometimes said to be philosophical.¹ In presence of such looseness of expression what was the historian to do? Obviously, he could only declare the sense in which the word was used in other histories of Philosophy, and abide by that. Had I not fixed a precise meaning to the word, I must have written a History of Knowledge, not a History of Philosophy.

My explanation was of little avail. The object of my work being to show the essential futility of Philosophy, in the restricted sense of that word, I was supposed to have intended a crusade against Philosophy in the wider sense; and readers who no more believed in Ontology than I did were startled by my attacks on it under the name of Philosophy. After this experience I cannot place much reliance on the security of any definition; but for the sake of attentive readers I have stated what position Philosophy holds in relation to Theology and Science; and to avoid equivocation I shall use the words Metaphysical Philosophy, or Ontology, and sometimes simply Metaphysics, to designate inquiries on the Subjective Method into the ultimate essence of things.

§ 9. Unhappily there is no uniformity even in the use of the term Metaphysics. Sometimes it means Ontology. Sometimes it means Psychology. Sometimes it means the highest generalities of Physics. The first of these inquiries I hold to be utterly futile, hopelessly beyond human ken. But the second and third are legitimate inquiries, which take their place in human knowledge whenever they are pursued on the Objective Method, and only deserve

¹ Hegel: *Geschichte der Philosophie*, i. 72. Compare also Hamilton, *Metaphysics*, i. 63.

reproof when pursued on the Subjective Method, upon which *all* problems are insoluble. As I have shown at some length elsewhere,² all problems are legitimate which admit Verification of their premisses and conclusions; and no Verification is possible except on the Objective Method.

§ 10. In the arrangement of Aristotle's treatises, those which succeeded the Physics were called τὰ μετὰ τὰ φυσικὰ βιβλία—indicating that they were to be studied *after* the Physics, either because their topics were evolved from physical inquiries, or because their topics were beyond physical inquiry. The equivoque still continues. Metaphysics may concern itself with the last conclusions of Physics, dealing with these results as its elements; or it may concern itself with inquiries beyond the region of Experience, entirely removed from Verification, transcending Sense, and drawing its data from a higher source. Obviously, in proportion as it seeks its elements in the relations of sensible phenomena it forms one branch of legitimate inquiry, and the only question then is as to the validity of the Method it employs. In proportion as it seeks its elements in the relations of supersensible phenomena it separates itself from Experience, ceases to be amenable to the ordinary canons of Research, and grounds its existence on the possession of a peculiar criterion—a direct and immediate knowledge of the Absolute.

The confusion of these two distinct conceptions is very common, and is the source of much perplexity. Those who hold the doctrine of the relativity of knowledge may admit without incon-

sistency many principles which are metaphysical in the sense of transcending Experience in their generality, although founded on Experience and conformable with it: such, for example, are causality and inertia. There is a large admixture of such Metaphysics, in all philosophical Physics; and in this sense we may call Metaphysics the *prima philosophia*. But Experience is here the source and pattern: the Objective Method with its rigorous tests of Verification rules as absolutely here as in every other department of positive inquiry. The Unknown is only a prolongation of the Known, and is trusted only so far as it is in strict conformity with the Known. The Invisible is but the generalisation of the Visible.

Those who hold that, over and above the conceptions furnished through Experience, the mind brings with it certain conceptions antecedent to and independent of Experience, who hold that, over and above our relative knowledge, we have absolute knowledge, *reverse* this procedure from the Known and Visible to the Unknown and Invisible; and starting from what their rivals declare to be not simply the Unknown but the Unknowable, they deduce from it certain conclusions which they present as ontological truths capable of guiding us in discovering the relations of phenomena. Let Descartes be heard on this point: "Perspicuum est optimam philosophandi viam nos sequuturos, si ex ipsius Dei cognitione, rerum ab eo creaturarum explicationem deducere conemur, ut ita scientiam perfectissimam, quæ est effectuum, per causas acquiramus."³ The fallacy lies in concluding that, because, in Mathematics

² Aristotle, chap. iv.

³ Descartes: *Princip. Philos.* ii. § 22.

and all deductive operations, we unfold the particulars contained implicitly in the generalities, we should therefore always seek particulars in this way. But the procedure is only justifiable when the generalities are proved to be indisputably true, and when the particulars deduced are by Verification shown to be really as well as verbally contained in them. Now, what are the chief objects of absolute knowledge, the generalities from which ontologists deduce? They are God, Freedom, Immortality, Causality, Existence: the noumena of which all the manifold experiences are phenomena.¹ That it is possible to *infer* these, no one denies; but their value as inferences opens an interterminal discussion. The ontologists claim to *know* them directly, immediately, certainly. Their opponents affirm—and endeavour psychologically to prove—that such knowledge is impossible, and that, if possible, it would be infertile, because incapable of being applied to the problems of phenomena except through Experience; infertile, because it can only be a comparison of ideas with ideas, never of ideas with facts; and thus stumbles over the old sceptical objection—*τίς κρινεῖ τὸν ὑγιεινόν*. Suppose, for example, that antecedently to all Experience we know the general law of Causality, it is only through Experience we can enrich this knowledge. We may know that every effect has a cause; this knowledge we may have brought with us into our phenomenal life; but what concerns us is, to know the particular cause of each particular effect, and, if we can ascertain that, the general axiom may be disregarded; if we cannot

ascertain that, the general axiom is powerless.

§ 11. The valid objection against Metaphysics is not so much against the subjects of inquiry as against the Method of inquiry; if the Method were legitimate, its results would be legitimated. I shall consider this Method by-and-bye; for the present I invoke the unequivocal verdict of History, which pronounces it to be the prolonged impotence of two thousand years and all its results, as shifting as the visionary phantoms of reverie. When we are awake, says Aristotle, we have a world in common; when we dream, each has his own. Kant aptly applies this to metaphysicians; “when we find a variety of men having various worlds, we may conclude them to be dreaming.” It is because the majority of thinking men have been convinced that inquiries conducted on the Metaphysical Method are but as dreams, that they have everywhere in Europe fallen into discredit. Once the pride and glory of the greatest intellects, and still forming an important element of liberal culture, the present decadence of Metaphysics is attested no less by the complaints of its few followers than by the thronging ranks of its opponents. Few now believe in its large promises; still fewer devote to it that passionate patience which is devoted by thousands to Science. Every day the conviction gains strength that Metaphysics is condemned, by the very nature of its Method, to wander for ever in one tortuous labyrinth, within whose circumscribed and winding spaces weary seekers are continually finding themselves in the trodden tracks of predecessors who could find no exit.

Metaphysical Philosophy has been ever in movement, but the movement

¹ ἔστιν ἐπιστήμη τις ἥ θεωρεῖ τὸ δυν ἢ ὄν καὶ τὰ τούτῃ ὑπάρχοντα καθ' αὐτό.—Aristotle: *Met.* iii. 1.

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has been circular; and this fact is thrown into stronger relief by contrast with the linear progress of Science. Instead of perpetually finding itself, after years of gigantic endeavour, returned to the precise point from which it started, Science finds itself, year by year, and almost day by day, advancing step by step, each accumulation of power adding to the momentum of its progress; each evolution, like the evolutions of organic development, bringing with it a new functional superiority, which in its turn becomes the agent of higher developments. Not a fact is discovered but has its bearing on the whole body of doctrine; not a mechanical improvement in the construction of instruments but opens fresh sources of discovery. Onward, and for ever onward, mightier and for ever mightier, rolls this wondrous tide of discovery. While the first principles of Metaphysical Philosophy are to this day as much a matter of dispute as they were two thousand years ago,¹ the first principles of Science are securely established, and form the guiding lights of European progress. Precisely the same questions are agitated in Germany at the present moment that were agitated in ancient Greece; and with no more certain Methods of solving them, with no nearer hopes of ultimate success. The History of Philosophy presents the spectacle of thousands of intellects—some the greatest

that have made our race illustrious—steadily concentrated on problems believed to be of vital importance, yet producing no other result than a conviction of the extreme facility of error, and the remoteness of any probability that Truth can be reached.¹ The only conquest has been *critical*—that is to say, psychological. Vainly do some argue that Philosophy has made no progress hitherto, because its problems are complex, and require more effort than the simpler problems of Science; vainly are we warned not to conclude from the past to the future, averring that no progress will be made because no progress has been made. Perilous as it must ever be to set absolute limits to the future of human capacity, there can be no peril in averring that Metaphysics never will achieve its aims, because those aims lie beyond all scope. The difficulty is impossibility. No progress can be made because no basis of certainty is possible. To aspire to the knowledge of more than phenomena—their resemblances, co-existences, and successions—is to aspire to transcend the inexorable limits of human faculty. To *know* more, we must *be* more.

In the early days of speculation all Philosophy was essentially metaphysical, because Science had not emerged from Common Knowledge to claim theoretical jurisdiction. The particular sciences then cultivated, no less than the higher

¹ "C'est la honte éternelle de la philosophie de n'avoir pas jusqu'à présent mis au jour un résultat positif, un principe une fois pour toute reconnu et universellement admis. Bien mieux, il n'y a pas même un résultat négatif, une défaite complète, irrévocable d'une doctrine si réfutée qu'elle soit."—Delboeuf: *Essai de Logique Scientifique*, Liège, 1865, p. 10. Compare Kant: *Prolegomena zu einer jeden künftigen Metaphysik*, passim.

¹ Compare Kant in the preface to the 2nd ed. of the *Kritik der reinen Vernunft*: "Der Metaphysik.....ist das Schicksal bisher noch so günstig nicht gewesen, dass sie den sichern Gang einer Wissenschaft einzuschlagen vermocht hätte; ob sie gleich älter ist als alle übrigen.Es'ist also kein Zweifel, dass ihr Verfahren bisher ein blosses Herumtappen und, was das Schlimmste ist, unter blossen Begriffen gewesen sei."

generalities on Life, Destiny, and the Universe, were studied on one and the same Method; but in the course of evolution a second Method grew up, at first timidly and unconsciously, gradually enlarging its bounds as it enlarged its powers, and at last separating itself into open antagonism with its parent and rival. The child then destroyed its parent; as the mythic Zeus, calling the Titans to his aid, destroyed Saturn and usurped his throne. The Titans of the new Method were Observation and Experiment.

There are many who deplore the encroachment of Science, fondly imagining that Metaphysical Philosophy would respond better to the higher wants of man. This regret is partly unreasoning sentiment, partly ignorance of the limitations of human faculty. Even among those who admit that Ontology is an impossible attempt, there are many who think it should be preserved in, because of the "lofty views" it is supposed to open to us. This is as if a man desirous of going to America should insist on walking there, because journeys on foot are more poetical than journeys by steam; in vain is he shown the impossibility of crossing the Atlantic on foot; he admits that grovelling fact, but his lofty soul has visions of some mysterious overland route by which he hopes to pass. He dies without reaching America; but to the last gasp he maintains that he has discovered the route on which others may reach it.

Let us hear no more of the lofty views claimed as the exclusive privilege of Metaphysics. Ignorant indeed must be the man who nowadays is unacquainted with the grandeur and sweep of scientific speculation in Astronomy and Geology, or who has never been thrilled by the

revelations of the telescope and microscope. The heights and depths of man's nature, the heights to which he aspires, the depths into which he searches, and the grander generalities on Life, Destiny, and the Universe, find as eminent a place in Science as in Metaphysics. And even were we compelled to acknowledge that lofty views were excluded from Science, the earnest mind would surely barter such loftiness for Truth? Our struggle, our passion, our hope, is for Truth, not for loftiness; for sincerity, not for pretence. If we cannot reach certain heights, let us acknowledge them to be inaccessible, and not deceive ourselves and others by phrases which pretend that these heights are accessible. Bentham warns us against "question-begging epithets"; and one of these is the epithet "lofty," with which Metaphysical Philosophy allures the unwary student. As a specimen of the sentiment so inappropriately dragged in to decide questions not of sentiment but of truth, consider the following passage delivered from the professorial chair to students whose opinions were to be formed:—

"A spirit of most misjudging contempt has for many years become fashionable towards the metaphysical contemplations of the elder sages. Alas! I cannot understand on what principles. Is it, then, a matter to be exulted in, that we have at length discovered that our faculties are only formed for earth and earthly phenomena? Are we to rejoice at our own limitations, and delight that we can be cogently demonstrated to be prisoners of sense and the facts of sense? In those early struggles after a higher and more perfect knowledge, and in the forgetfulness of every inferior science through the very ardour of the pursuit,

there is at least a glorious, an irresistible testimony to the loftier destinies of man; and it might almost be pronounced that in *such* a view, their very errors evidence a truth higher than all our discoveries can disclose! When Lord Bacon, with his clear and powerful reasonings, led our thinkers from these ancient regions of thought (then newly opened to the modern world) to the humbler but more varied and extensive department of inductive inquiry, I represent to myself that angel-guide, all light and grace, who is pictured by our great poet as slowly conducting the first of our race from Paradise, to leave him in a world, vast, indeed, and varied, but where thorns and thistles abounded, and food—often uncertain and often perilous—was to be gained only by the sweat of the brow and in the downcast attitude of servile toil.”¹

It would be an insult to the reader's understanding to answer the several absurdities and “question-begging” posi-

tions of this passage, which, however, is typical of much that may be read in many writers. Contempt for the speculations of the elder sages, or indeed of moderns, is a feeling we should be slow to acknowledge, whatever estimate we formed of their truth. If my polemical tone against a Method I believe to be not only hopeless but nowadays pernicious has sometimes seemed to warrant such an accusation, let me, on personal no less than philosophic grounds, rebut it here. The memory of long, laborious study, ever baffled ever renewed, would alone suffice to create sympathy and respect for all earnest seekers; and if this feeling were not present, the Positive Philosophy would suffice, pointing as it does to all the great metaphysicians as necessary precursors, without whose labours Science would never have existed. It is not because the noble pioneers have perished in the trenches that their renown should fade. If we make a bridge of their dead bodies, we should raise a monument to their devotion.

¹ Archer Butler: *Lectures on the Hist. of Ancient Philosophy*, ii. 109.

II.—THE OBJECTIVE AND SUBJECTIVE METHODS

§ 12. A SPANISH metaphysician truly says that the question of Method rules, and in one sense comprehends, all philosophical questions, being indeed Philosophy in action.² As it is a path on

which Truth is sought, we must first come to some agreement respecting the object of search.

The question, What is Truth? has been variously answered, but, instead of pausing here to consider the answers, I

¹ Nieto Serrano: *Bosquejo de la Ciencia Viviente*, Madrid, 1867. *Parte primera*, p. 31.

² “La cuestion de método domina y comprende hasta cierto punto todas las cuestiones filosóficas. Efectivamente el método filosófico es la filosofía

misma en accion, la cual aparece ya tal cual es desde los primeros pasos, y no puede desmentirse en lo sucesivo.”

will propose one which is sufficiently catholic to be accepted by all schools.

Truth is the correspondence between the order of ideas and the order of phenomena, so that the one is a reflection of the other—the movement of Thought following the movement of Things.

The correspondence can never be absolute: it must, from the very structure of the mind, be relative; but this relative accuracy suffices when it enables us to foresee with certainty the changes which will arise in the external order under given conditions. If the order in our ideas respecting falling bodies sufficiently corresponds with the order of the phenomena themselves to enable us to express the Law with precision, and foresee its results with certainty, we have in that Law a truth of the only kind attainable by us.

The reader will observe that I have used the phrases "order in ideas" and "movement of thought" instead of adopting the ordinary formula "ideas conformable with objects." If Truth is the conformity of ideas with objects, Truth is a chimera, or Idealism is irresistible. "La notion de *vérité* implique une contradiction," says Delbœuf. "Par définition, une idée n'est vraie qu'à la condition d'être conforme, adéquate à son objet. Mais, par essence, une idée est nécessairement différente d'un objet. Comment donc puis-je parler d'une équation entre l'idée et son objet?"¹ The old sceptical arguments are unanswerable on this ground. We need not, however, rush into Idealism by affirming the identity of ideas and their objects; we need simply give up all pretension to absolute knowledge, and rest contented with rela-

tive knowledge, which permits of our adjusting our actions to the external order. Indeed, the ultimate aim of knowledge is adaptation; and we call it Truth when the adaptation is precise. What bodies are in themselves, what falling is in itself, need not properly concern us; only what are the relations in which bodies and their movements stand to our perceptions. If in attempting to comprehend these relations we succeed in so arranging our ideas that their order corresponds with the order of phenomena (as when we think of falling bodies having a velocity proportional to the time), that arrangement is Truth; but if, instead of the movement of Thought being controlled by the movement of Things, our ideas are arranged in an order which does not correspond with the order of phenomena (as when we think of the velocity being proportional to the space fallen through), that is Error. And this discloses the imperfection of the many definitions of Truth which regard it as "conformity among ideas." The conception of velocity proportional to *space* is a conception which would have nothing against it were it not opposed to the facts. As a pure deduction it is inevitable; a movement of Thought determined by some pre-existing thought necessarily takes that course; but a movement of Thought determined by that of Things, following step by step the succession of phenomena, leads to the conclusion of velocity proportional to the *time*.

§ 13. To attain this correspondence between the internal and external order is the object of Search; and the Methods of Search are two:—

a. The Objective Method which moulds its conceptions on realities by closely following the movements of the objects as they severally present themselves

¹ Delbœuf: *Essai de Logique Scientifique*, p. 35.

to Sense, so that the movements of Thought may synchronise with the movements of Things.

- ß. The Subjective Method which moulds realities on its conceptions, endeavouring to discern the order of Things, not by step by step adjustments of the order of ideas to it, but by the anticipatory rush of Thought, the direction of which is *determined* by Thoughts and not *controlled* by Objects.

Observation of objects presented to the mind must be succeeded by Conjecture respecting the connecting, but unobserved, links. The successive stages of inquiry are from Observation to Conjecture, and from Conjecture to Verification. The Subjective Method stops at the second stage: its function is Hypothesis. The Objective Method passes on to the third stage: its function is Verification. Thus, while the first characterises our spontaneous tendency, and is seen in full vigour in all the early forms of speculation, the second characterises our reflective tendency, and is the source of positive knowledge. The Objective Method thus absorbs what is excellent in the Subjective Method, as Science takes up into itself whatever Metaphysics can establish, rejecting what is irrelevant and completing what is incomplete. Both physicist and metaphysicist employ Observation and Conjecture; but the physicist, if true to the Objective Method, is careful to verify the accuracy of his observations and conjectures, submitting the order of his ideas to the order of phenomena; whereas the metaphysicist, obeying the subjective impulse, is careless of Verification, and is quite ready to rely on data and conclusions which are absolutely incapable of Verification. The one freely employs Hypothesis under the rigorous condition of

never relying on a conjecture as a fact, never assuming that a harmony in his conceptions must necessarily imply a corresponding arrangement in phenomena; the other employs Hypothesis under the single condition of not thereby introducing a logical discord. In the one case the "anticipatory rush of thought" is controlled by the confrontation of ideas with objects. In the other case the rush of thought is controlled only by the confrontation of ideas with ideas. Briefly, then, it may be said that the Objective Method seeks Truth in the relations of objects; whereas the Subjective Method seeks it in the relations of ideas.

§ 14. Philosophers expound the objective and subjective elements of which Knowledge is composed, as the *material* and *formal* elements. Things furnish the materials. Thought furnishes the forms. Objects stimulate the activity of the Mind; the Laws of mental action determine the result, in the forms of percepts, concepts, and judgments. But philosophers continually overlook the important consideration that the Mind, besides its laws which determine the forms of the material given by objects, has also a movement of its own; and this movement is determined from within, by some pre-existing movement, just as it may be determined from without, by the stimulus of objects. It is this *subjective current* which, disturbing the clear reflection of the objective order, is the main source of error. It determines those concepts and judgments which have no corresponding objects: hallucinations, reveries, dreams, hypotheses, figments. This being so, we cannot accept the notion adopted by Sir W. Hamilton from Twisten, that "the condition of error is not the activity of

intelligence, but its inactivity." On the contrary, we must assign error to the activity of intelligence when it follows its own impulses in lieu of receiving the direction from objects. "What is actually thought," according to Twisten and his follower, "cannot but be correctly thought. Error first commences when thinking is remitted, and can in fact only gain admission in virtue of the truth which it contains;—every error is a perverted truth."¹ This seems to me so glaringly in opposition to all rational interpretation that I must conclude it to mean something very different from what it says. Hamilton's comment only makes the matter worse.

§ 15. That the source of Error is *the subjective current determining the direction of the thoughts*, is easily shown. Error arises in the substitution of Inference for Presentation. No error can possibly arise in Sensation itself, but solely in the movements of thought which are prompted by the sensation. The immense activity of this subjective current, the large interfusion of Inference in the simplest acts of Perception, has long been recognised; and, as I have said elsewhere, what is called a "fact," and held to be indisputable because it is a "fact," is in reality a bundle of inferences, some or all of which may be false, tied together by sensations, which must be true. Take a case so simple as the sight of an apple on the table. All that is here directly certified by consciousness is the sensation of a coloured surface; with this are linked certain ideas of roundness, firmness, sweetness, and fragrance, which were once sensations, and are now recalled by this of colour; and the whole group of actual and inferred sensations

clusters into the fact which is expressed in "there is an apple." Yet any one of these inferences may be erroneous. The coloured object may be the imitation of an apple in wood or stone; the inferences of roundness and solidity would then be correct, those of sweetness and fragrance erroneous; the statement of fact would be false. Or the object seen may be another kind of fruit, resembling an apple, yet in important particulars differing from it. Or the object may not exist, and our perception may be an hallucination. Thus a case seemingly so simple may furnish us with the evidence that Facts express our conception of the order in external things, and not the unadulterated order itself. Should the accuracy of any particular fact happen to be of importance—and in Science all facts are important—we must verify it, before accepting it. How is it verified? By *submitting each of its constituent inferences to the primordial test of Consciousness*. The test with regard to objects within range of sense is obviously the reduction of Inference to Sensation. The test with regard to axioms, or general principles transcending sense, is conformity with the laws of thought; when we have thus verified a fact we have attained the highest degree of certitude.

The mental vision by which in Perception we see the *unapparent* details—*i.e.*, by which sensations formerly co-existing with the one now affecting us are reinstated under the form of ideas, which represent the objects—is a process closely allied to Ratiocination, which also presents an *ideal series* such as, if the objects were before us, would be a series of sensations, or perceptions. A chain of reasoning is a chain of inferences, which are *ideal presentations* of the details now *unapparent to sense*. Could we realise

¹ Hamilton : *Logic*, i. 77.

all the links in this chain, by placing the objects in their actual order as a visible series, the chain of reasoning would be a succession of perceptions, and would cease to be called reasoning. The path of the planets is seen by reason to be an ellipse; it would be perceived as a fact if we were in a proper position, and endowed with the requisite instruments to enable us to follow the planet in its course. Not having this advantage, we infer the unapparent points in its course, from those which are apparent. We see them mentally. In like manner, suppose a human body is discovered under conditions which suggest that it has been burned, but without sufficient indication of the cause—*i.e.*, the facts antecedent to the burning. Some one suggests that these unapparent facts are those of Spontaneous Combustion. Our greater familiarity with the facts of combustion in general, and with the facts of the animal organism, enables us to *see* that this explanation is absurd; we mentally range the supposed objects before us, and see that *such* an order of co-existences and successions is in contradiction to all experience; we cannot see what the actual order was, but see clearly that it was not *that*.

Correct reasoning is the ideal assemblage of objects in their true relations of co-existence and succession. It is seeing with the mind's eye. Bad reasoning results from overlooking either some of the objects, or their relations; some links are dropped, and the gap is filled up from another series. Thus the traveller *sees* a highwayman, where there is truly no more than a sign-post in the twilight; and a philosopher, in the twilight of knowledge, *sees* a pestilence foreshadowed by an eclipse.

These considerations may elucidate

the real meaning to be assigned to Facts, which are sometimes taken to express the order of external things, and sometimes our conception of that order—our *description* of it; just as sound means both the vibrations of the air and our sensation of them. There is a general tendency to use the word Fact for a final truth. "This is a fact, not a theory," means, "This is an indisputable truth, not a disputable *view* of the truth." But if, as we have seen, Facts are inextricably mingled with Inferences, and if both Perception and Reasoning are processes of *mental vision reinstating unapparent details*, and liable to error in the inferences, it is clear that the radical antithesis is not between Fact and Theory, but between *verified and unverified Inferences*.

The antithesis between Fact and Theory is untenable, for the same statement may be either a fact or a theory, without any change in its evidence. It is a fact that the earth is globular. It is a fact that this globe is an oblate spheroid. It is a fact that its orbit is elliptical. No one doubts that these are facts, no one doubts that they are theories. Shall we say that they were theories until they were verified, when they became facts? This will not extricate us; since all facts require verification before they are admitted as truths; up to that point they are not less inferential than theories.

I see an apple now falling, and I see an apple which has fallen. These are two facts which ordinary language will not suffer us to call theories. Now consider two theories which ordinary language suffers us to call facts—namely, that all apples when unsupported will fall, and that the spaces fallen through will be as the squares of the times. These

are two theories of extreme generality, which are far more indisputable than the facts we have contrasted them with. They carry such certainty that no mind having the requisite preparation can for a moment hesitate in assenting to them. They are inferences which are necessities. Whereas the inferences involved in the facts before named may very easily be erroneous. The falling object may not be an apple; the apple found at the foot of the tree may not have fallen, but have been plucked and placed there. Thus doubt is permissible; and if the facts carried any importance we should be bound to verify the accuracy of our inferences. No doubt is permissible in respect to the two theories, because the inferences on which they rest have already been vigorously verified. They carry none of those possibilities of error which we know may be carried by individual experiences; all such possibilities have been eliminated in the establishment of the general truth. Should any individual experience seem in contradiction with a thoroughly verified theory, should a hundred individual experiences contradict it, our confidence would suffer no disturbance; we should at once assign them to the interference of some *condition not included in the formula*. That condition might be wholly undiscoverable, but we should be certain that the laws of nature were invariable; and our experience of disturbing influences is sufficiently extensive to invoke them in every apparent exception to a law. If it happened that two magnets placed side by side impressed on a particle of iron a velocity greater, or less, than the sum of the velocity due to each magnet acting separately, and if this were to occur a thousand times, we should not doubt the truth of the law that the velocity is

proportional to the force, but should attribute this exception to some exceptional condition, such as the influence of one magnet on the other. The reason is simple: the law has been rigorously verified; the absence of any exceptional condition has not been verified, whereas the presence of such a condition is suggested by manifold experiences in analogous cases.

Failing thus to discover any valid antithesis between Fact and Theory, we must look upon the ordinary distinction as simply verbal. Shall we express it by the terms Description and Explanation, implying that a Fact describes the order of phenomena, and a Theory interprets that order? For many purposes this would suffice. Yet on examination we shall find that an Explanation is only a fuller Description: more details are introduced, greater precision is given, the links in the chain which are unapparent to sense are made apparent to reason; but the essential mystery is untouched; successions are enumerated, but causation escapes. Thus in the description of falling bodies, greater fulness and precision of detail are given when the unapparent links are added, and the law of gravitation is introduced as the explanation. In like manner the description of an event, say the destruction of a house by a fire, acquires greater fulness and precision of detail when the apparent details are completed by some eyewitness who saw the fire break out, and explains it by this enumeration of details. In each case the objects are ranged in their order, and are *seen* thus; but in each case many objects are not seen, many intermediate links are overlooked, or are undiscoverable; and the causal nexus is for ever undiscoverable. Thus it is that explanations are descriptions,

and descriptions are explanations, facts are theories, and theories facts. Science is the explanation of nature; the systematic co-ordination of the facts of co-existence and succession.

§ 16. In the preceding paragraphs we have vindicated the necessity of the subjective current, and its dangers. The weakness of the Subjective Method is its impossibility of applying Verification; whereas the security of the Objective Method lies in its vigilant Verification. In both the mind has to supply the *formal* elements; in both it has to link together sensations by inferences, and to classify objects according to inferred relations. But the Objective Method simply co-ordinates the materials furnished by Experience; it introduces no new materials; or if it admits them, it does so provisionally and hypothetically; they are not accepted as real objects until their reality has been otherwise established. Whereas the Subjective Method is perpetually overstepping the limits that divide the material from the formal; its tendency is to confound concepts with percepts, ideas with objects, conjectures with realities. It commits the fault of drawing *material* from the Subject, instead of drawing only *form*. It takes up an inference and treats it as a fact, and thus gives its own fictions the character of reality. Because it cannot apply Verification it assumes that the order of ideas must correspond with the external order if no disorder (contradiction) be displayed. Hence it is that metaphysical conclusions are sometimes so audaciously at variance with what is known of the external order.¹

§ 17. The Objective Method is incapable of reaching any results without the large employment of Inference, the successive steps of discovery being Observation, Hypothesis, and Verification. It is distinguished from the Subjective Method, not by its *aim*, which is in both that of co-ordinating the relations of objects, but by its principle of seeking the relations in the order of the objects themselves, instead of in the order of our ideas: submitting therefore every Inference to the control of Verification, and refusing to accept a conjecture as a fact until it has been tested by confrontation with the external order. The cardinal distinction between Metaphysics and Science lies in Method, not in the nature of their topics; and the proof of this is exemplified in the fact that a theory may be transferred from Metaphysics to Science simply by the addition of a verifiable element; or, conversely, may be transferred from Science to Metaphysics by the withdrawal of this same verifiable element. Thus the law of gravitation is a scientific theory; but if we withdraw from it the verifiable formula "inversely as the square of the distance and directly as the mass," there remains only the occult Attraction—which is metaphysical. On the other hand, if to a metaphysical theory of gravitation, which explains the phenomena by Attraction or an "inherent virtue," we add the verifiable formula of its mode of action, the purely subjective conception passes at once into the objective region, and a scientific theory results.

§ 18. In the course of the history of Philosophy we "incessantly witness the

¹ Hegel, for instance, bases his system on Contradiction. So far from admitting that a thing cannot be the contrary of that which it is, he affirms, as a fundamental principle, that

"everything is at once that which it is and the contrary of that which it is."

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disastrous effects of transporting the *formal* elements of knowledge into the region of *material* elements—"realising abstractions," as it is called—and deducing conclusions from unverified inferences as if they had been verified. We witness the efforts of philosophers to interpret the external order by the internal order, animating Nature with human tendencies, interpreting *motors* by *motives*. Thus, because we derive our conceptions of Force and Cause from our own efforts and volitions, we interpret the changes seen without us by the changes felt within us. This is the source of the Fetichism of children and savages; of the Polytheism of early nations; and, by a gradual refinement in abstraction, of the Metaphysics and Physics of philosophers. Causes are first personified; next raised into Deities; then, by gradual elimination of the personal qualities, transformed into Entities; and finally resolved into Forces, which are exponents of relations. Thus first disappears the Will, next the independent existence; and what finally remains is an *abstract expression of the observed order*.

§ 19. To make the two Methods more readily appreciable by exhibiting them in operation, I will select an imaginary case and two real cases.

From a country where clocks are unknown, even by tradition, two travellers arrive, and in the kitchen of the cottage where they are first received they observe with astonishment an eight-day clock. The phenomena it presents are so novel that our travellers at once begin attempting an explanation. Now, all explanation consists in bringing the unknown facts under certain general facts already known; only by finding what the unknown is *like*, can it be classed and

known. In the present case the new phenomena resemble certain phenomena observed in animals. Hence the first rough approximation to an explanation is the conjecture that the clock must be alive. Suppose one of the travellers to be uncultivated, and still in the fetichistic stage, he will at once *conclude from his conjecture* that the clock is a fetich, and is inhabited by a good or evil Spirit. Let us, however, suppose him to have emerged from the primitive stage of intellectual development, and to have become a thoughtful metaphysician. His companion we will suppose to have been trained in Science and its methods. Both start from the spontaneous hypothesis that the clock is alive, this being the conjecture which most naturally ranges the new phenomena under known phenomena. Let us now watch their procedure.

A is a subjective philosopher, and, not aware of the absolute necessity of verifying his hypothesis, proceeds to apply it, and to deduce explanations of the clock-phenomena from the known facts of animal life. The ticking resembles the regular sounds of breathing; the beating of the pendulum is like the beating of the heart; the slow movements of the hands are they not movements of feelers in search of food? the striking of the hours are they not cries of pain or expressions of anger? If the hours are struck just as he approaches the clock to examine it, or has laid hold of it, the coincidence easily suggests rage or terror as the cause; and he having once formed that conception, all subsequent experience of the clock striking when he is at a distance from it, or when no one is in the kitchen, will fail to shake it, but will be accommodated to it by other explanations.

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By continuing to observe the phenomena his first rough explanation would gradually be modified, and give place to one more consistent with the facts. A variety of ingenious explanations would occur; but they would all be vitiated by the absence of any verification of the data. He observes a certain periodicity in the recurrence of the cries. There is a regularity in the succession of these cries—one being always followed by two, and two by three, and so on up to twelve; after which one recurs and two and three in the old order. To his great delight he at last observes a coincidence between each of these cries and the position of the hands on the dial-plate; the longer hand always pointing to twelve, and the shorter hand to the number corresponding with the cries. Hence he properly infers a causal connection; but *what* that is he can only guess; out of several guesses he selects the most plausible. He propounds his explanation to his friend B with perfect confidence in its truth.

B hereupon impatiently points out the treacherous nature of the procedure A has followed. "My dear fellow, you seem unaware that your starting-point requires strict examination. You assume the vitality of the clock, and, having assumed this, you interpret by it the resemblance of ticking to breathing, and of the sounds to cries of pain and anger. But the clock may be alive, and yet these resemblances may be fallacious; they must be verified before they can be accepted; and if the clock is *not* alive? You muddle yourself with Metaphysics, and amuse yourself with drawing deductions, instead of verifying your data. In classing the new facts under old facts it is necessary that we should assure ourselves that the resemblance we imagine

is a real resemblance, and springs from similar roots. To effect this, rigorous Analysis is indispensable. But on your Subjective Method there is no analysis of objects, only of ideas. Let me describe the course of my own investigations, guided by that Method which Science has taught me to rely on.

"Like you, I conjectured that an animal was before me. What animal? I first perceived that in many respects it was unlike all animals known to me; and, pursuing this track, I found so many points of unlikeness, and these of such significance in animal life, that *another* conjecture emerged, and I asked, Is it an animal at all? Here were two starting-points, both conjectural, both needing verification. I chose to begin upon the second, and for this reason: if the clock were not an animal, the natural inference was that it must be a machine. I was already familiar with many machines, more so than with organisms, and I began trying how far the observed phenomena could be brought under the known facts of mechanism. Now observe the operation of scientific method! You might have joined with me in forming precisely the same conjectures, but you would have started off at a tangent, and would have deduced from mechanical facts just as you deduced from vital facts, without troubling yourself about Verification. Had I not employed that potent instrument Analysis, I should never have discovered the truth about the clock. The complex facts had to be decomposed, and their elements ascertained. As this could not (successfully) be done by analysis of my ideas, I had no alternative but to take the clock to pieces, bit by bit, in the search after the objective condition of each element in this complex whole. I removed the

dial-plate, then the back, finally the whole external case; but still the pendulum swung, still the sounds regularly succeeded. Accidentally arresting the pendulum, I found that all the phenomena disappeared; restoring its swing, I restored the phenomena. After repeating this often enough to eliminate all possibilities of coincidence I came to the conclusion that the clock-phenomena were dependent on the motion of the pendulum. This was one step, and an important one; but it was no explanation. There were two questions still to be answered: What makes the pendulum move in this manner? and how does its motion effect the observed results? Had I been deprived of the means of objective analysis, unable to take the clock to pieces, I should have been reduced to your procedure—ingenious guessing. But Observation having disclosed the ascent of one weight and descent of another, I conjectured that this motion was connected with the striking of the hours: I verified it by pulling the descending weight, and I found that, as I pulled, the hands revolved, and the sounds, previously heard at long intervals, now rapidly succeeded each other. Having laid bare the interior, I could trace the action of each part of the mechanism. I found that each beat of the pendulum detached one tooth of a wheel, and thus liberated the arrested movement of that wheel. I observed that these liberations were pulses coinciding with the tickings, and that the movements of the hands coincided with these movements of the wheel, every sixty revolutions of the wheel coinciding with each stroke of the clock. Having thus *explained* the mechanism, I rejected the idea of the clock being an organism, as a needless

and unacceptable hypothesis. I found that it resembles other mechanisms in all its essential characters, whereas it wants the primary character of an organism, that of drawing its force from Nutrition."

§ 20. Even those who may object that our scientific traveller has too obviously the advantage in this illustration will admit that the two procedures are characteristically opposed. It is in taking an object to pieces by Analysis, either real or ideal, that we learn to estimate its elements and thus to estimate the whole. The Subjective Method deduces the elements from the whole; and it is confirmed in this procedure by the success of Deductive Science. There is, however, a vital distinction between the Deductive Method and the Subjective Method, and it is this: in the former both data and conclusions are verified by confrontation with the external order. If truth is the correspondence between the order of ideas and the order of phenomena, the only right Method must be that which step by step assures the correspondence, demonstrating that the order of our ideas is also that of the phenomena they represent.

§ 21. I have still to exemplify the operation of the rival Methods by two cases that have not the drawback which may attach to imaginary illustration. The first shall be borrowed from Broussais, in his contrast of Brown's system with his own:—

A survey of the phenomena of life led both to the general conception of Excitation as the constant condition of all vital phenomena, and therefore as a compensious expression which resumed the general facts. Up to this point both followed the Objective Method. *From* this point the divergence was great:

"Nous professons d'abord avec Brown, que la vie ne s'entretient que par l'excitation. Mais nous abandonnons aussitôt cet auteur, parce qu'il prend la voie de l'abstraction en dissertant toujours sur *l'excitation considérée en elle-même*; nous aimons mieux *étudier ce phénomène dans les organes* et dans les tissus qui les composent, ou plutôt observer les organes et les tissus excités."¹

§ 22. Our second illustration shall be taken from the instructive though deplorable hypothesis of Spirit-rapping, which is an indelible disgrace to the education of our age.

A few persons stand round a table, gently resting their hands on it, but careful not to push in any direction. In a little while the table moves, at first slowly, afterwards with growing velocity. The persons are all of the highest respectability, above suspicion of wilful deceit. The phenomenon is so unexpected, so unprecedented, that an explanation is imperiously demanded. In presence of unusual phenomena, men are unable to remain without some explanation which shall render intelligible to them how the unusual event is produced. They are spectators merely; condemned to witness the event, unable to penetrate directly into its causes, unable to get behind the scenes and *see* the strings which move the puppets, they *guess* at what they cannot see. Man is *interpres Naturæ*. Whether he be metaphysician or man of science, his starting-point is the same; and they are in error who say that the metaphysician differs from the man of science in drawing his explanation from the recesses of his own mind in lieu of drawing it from the observation of facts. Both observe facts,

and both draw their interpretations from their own minds. Nay, as we have seen, there is necessarily, even in the most familiar fact, the annexation of mental inference—some formal element added by the mind, suggested by, but not given in, the immediate observation. Facts are the registration of direct observation and direct inference, congeries of particulars partly sensational, partly ideal. The scientific value of facts depends on the validity of the inferences bound up with them; and hence the profound truth of Cullen's paradox, that there are more false facts than false theories current.

The facts comprised in the phenomenon of "Table-turning" are by no means so simple as they have been represented. Let us, however, reserve all criticism, and fix our attention solely on the phenomenon, which, expressed in rigorous terms, amounts to this: the table turns; the cause of its turning is unknown. To explain this, one class of metaphysical minds refers it to the agency of an unseen Spirit. Connecting the spiritual manifestation with others which have been narrated to him, the interpreter finds no difficulty in believing that a Spirit moved the table; for "the movement assuredly issued from no human agency"; the respectable witnesses "declared they did not push." Unless the table moved itself, therefore, his conclusion must be that it was moved by a Spirit.

Minds of another class give another explanation, one equally metaphysical, although its advocates scornfully reject the spiritual hypothesis. These minds are indisposed to admit the existence of Spirits as agents in natural phenomena; but their interpretation, in spite of its employing the language of Science, is as utterly removed from scientific method as

¹ Broussais: *De l'Irritation*, 2nd ed. 1839, i. 55.

the spiritual interpretation they despise. They attribute the phenomenon to Electricity. Connecting this supposed electrical manifestation with some other facts which seem to warrant the belief of nervous action being identical with electricity, they have no hesitation in affirming that electricity streams from the tips of the fingers. It is even suggested by one gentleman that "the nervous fluid has probably a rotatory action, and a power of throwing off some of its surplus force." How entirely these ideas of nervous fluid, rotatory power, and surplus force are additions drawn from the imagination and not supplied in the objects, I need scarcely pause to point out.

Each of these explanations has been very widely accepted by the general public. The obvious defect in both lies in the utter absence of any objective guarantee. We ought to be satisfied with no explanation which is without its valid guarantee. Before we purchase silver spoons we demand to see the mark of Silversmiths' Hall, to be assured that the spoons are silver, and not plated only. The test of the assayer dispels our misgivings. In like manner, when the motion of a table is explained by spiritual agency, instead of debating whether the spirit "bring airs from heaven or blasts from hell," we let our scepticism fall on the preliminary assumption of the spirit's presence. Prove the presence of the spirit before you ask us to go further. *If present*, the spirit is perhaps capable of producing this motion of the table; we do not know whether it is, for we know nothing about spirits; at any rate, the primary point requiring proof is the presence of the spirit; we cannot permit you to assume such a presence merely to explain such a movement; for if the fact

to be explained is sufficient proof of the explanation, we might with equal justice assume that the movement was caused by an invisible dragon who turned the table by the fanning of his awful wings. If it is permissible to draw material from the Subject, and to make such assumption valid as regards objects, our right to assume the dragon is on a par with our right to assume the spirit.

A similar initial error is observable in the electrical hypothesis. Electricity may be a less intrinsically improbable assumption, but its presence requires proof. After that step had been taken, we should require proof that electricity could comport itself with reference to tables and similar bodies in this particular manner. We have various tests for the presence of electricity; various means of ascertaining how it would act upon a table. But seeing that the gentleman who spoke so confidently of "currents issuing from the tips of the fingers" never once attempted to prove that there *were* currents; and knowing, moreover, that these currents, if present, would *not* make a table turn, all men of true scientific culture dismissed the explanation with contempt.

Such were the metaphysical explanations of the phenomenon. They are vitiated by their Method. Very different was that pursued by men of science. The object sought was the unknown cause of the table's movement. To reach the unknown we must pass by the Objective Method through the avenues of the known; we must not attempt to reach it through the unknown. Is there any known fact with which this movement can be allied? The first and most obvious suggestion was that the table was pushed by the hands which rested on it. There is a

difficulty in the way of this explanation—namely, “that the persons declare solemnly they did *not* push; and, as persons of the highest respectability, we are bound to believe them.” Is this statement of any value? The whole question is involved in it. But the philosophical mind is very little affected by guarantees of respectability in matters implicating sagacity rather than integrity. The Frenchman assured his friend that the earth did turn round the sun, and offered his *parole d’honneur* as a guarantee; but in the delicate and difficult question of science, *paroles d’honneur* have a quite inappreciable weight. We may therefore set aside the respectability of the witnesses, and, with full confidence in their integrity, estimate the real value of their assertion, which amounts to this: they were *not conscious* of pushing. If we come to examine such a case, we find Physiology in possession of abundant examples of muscular action unaccompanied by distinct consciousness, and some of these examples are very similar to those of the unconscious pushing, which may have turned the table; and we are thus satisfied of three important points:—1. Pushing is an adequate cause, and will serve as well as either the supposed spirit or electricity to explain the movement of the table. 2. Pushing *may* take place without any distinct consciousness on the part of those who push. 3. Expectant attention is known to produce such a state of the muscles as would occasion this unconscious pushing.

Considered, therefore, as a mere hypothesis, this of unconscious pushing is strictly scientific; it may not be true, but it has fulfilled the preliminary conditions. Unlike the two hypotheses it opposes, it assumes nothing previously unknown, or

not easily demonstrable; every position has been or may be verified; whereas the metaphysicians have not verified one of their positions: they have not proved the presence of their agents, nor have they proved that these agents, if present, would act in the required manner. Of spirit we know nothing, consequently can predicate nothing. Of electricity we know something, but what is known is *not* in accordance with the table-turning hypothesis. Of pushing we know that it can and does turn tables. All, then, that is required to convert this latter hypothesis into scientific certainty is to prove the presence of the pushing in this particular case. And it is proved in many ways, positive and negative, as I showed when the phenomenon first became the subject of public investigation. Positive, because if the hands rest on a loose table-cloth, or on substances with perfectly smooth surfaces which will glide easily over the table, the cloth or the substances will move, and not the table. Negative, because if the persons are duly *warned* of their liability to unconscious pushing, and are told to keep vigilant guard over their sensations, they do not move the table, although previously they may have moved it frequently. When we have thus verified the presence of unconscious pushing, all the links in the chain have been verified, and certainty is complete.

§ 23. Reviewing the three explanations which the phenomenon of table-turning called forth, we elicit one characteristic as distinguishing the scientific or Objective Method—namely, the *verification* of each stage in the process, the guaranteeing of each separate point, the cultivated caution of proceeding to the unknown solely through the avenues of the known. The *germinal* difference, then, between

the metaphysical and scientific Methods is not that they draw their explanations from a different source, the one employing Reasoning where the other employs Observation, but that the one is content with an explanation which has no further guarantee than is given in the logical explanation of the difficulty; whereas the other imperatively demands that every assumption should be treated as provisional, hypothetical, until it has been confronted with fact, tested by acknowledged tests—in a word, *verified*. The guarantee of the metaphysician is purely logical, subjective: it is the *intellectus sibi permissus*; the guarantee of the other is derived from a correspondence of the internal with the external order. As Bacon says, all merely logical explanations are valueless, the subtlety of nature greatly surpassing that of argument: "Subtilitas naturæ subtilitatem argumentandi multis partibus superat"; and he further says, with his usual felicity, "Sed axiomata à particularibus ritè et ordine abstracta nova particularia rursus faciliè indicant et designant." It is these "new particulars" which are reached through those already known, and complete the links of the causal chain.

Open the history of Science at any chapter you will, and its pages will show how all the errors which have gained acceptance gained it because this important principle of verification of particulars was neglected. Incessantly the mind of man leaps forward to "anticipate" Nature, and is satisfied with such anticipations if they have a logical consistence. When Galen and Aristotle thought that the air circulated in the arteries, causing the pulse to beat, and *cooling* the temperature of the blood, they were content with this plausible

anticipation; they did not verify the facts of the air's presence, and its cooling effect; when they said that the "spirituous blood" nourished the delicate organs, such as the lungs, and the "venous blood" nourished the coarser organs, such as the liver; when they said that the "spirit," which was the purer element of the blood, was formed in the left ventricle, and the venous blood in the right ventricle, they contented themselves with unverified assumptions. In like manner, when in our own day physiologists of eminence maintain that in the organism there is a Vital Force which suspends chemical actions, they content themselves with a metaphysical unverified interpretation of phenomena. If they came to rigorous confrontation with fact, they would see that, so far from chemical action being "suspended," it is incessantly at work in the organism; the varieties observable being either due to a difference of conditions (which will produce varieties out of the organism), or to the fact that the action is masked by other actions.

§ 24. If the foregoing discussion has carried with it the reader's assent, he will perceive that the distinguishing characteristic of Science is its Method of graduated Verification, and not, as some think, the employment of Induction in lieu of Deduction. All Science is deductive, and deductive in proportion to its separation from ordinary knowledge and its co-ordination into System. The true antithesis is not between Induction and Deduction, but between verified and unverified cases of Induction and Deduction. The difference between the ancient and modern philosophies lies in the facility with which the one accepted axioms and hypotheses as the basis for its deductions, and the cultivated caution

with which the other insists on verifying its axioms and hypotheses before deducing conclusions from them.¹ We guess as freely as the ancients; but we know that we are guessing; and if we chance to forget it, our rivals quickly remind us that our guess is not evidence. Without guessing, Science would be impossible. We should never discover new islands did we not often venture seawards with intent to sail beyond the sunset. To find new land, we must often quit sight of land. As Dr. Thomson admirably expresses it: "Philosophy proceeds upon a system of credit, and if she never advanced beyond her tangible capital, our wealth would not be so enormous as it is."² While both metaphysician and man of science trade on a system of credit, they do so with profoundly different views of its aid. The metaphysician is a merchant who speculates boldly, but without that convertible capital which can enable him to meet his engagements. He gives bills, yet has no gold, no goods to answer for them; these bills are not representative of wealth which exists in any warehouse. Magnificent as his speculations seem, the first obstinate creditor who insists on payment makes him bankrupt. The man of science is also a venturesome merchant, but one fully alive to the necessity of solid capital which can on emergency be produced to meet his bills; he knows the risks he runs whenever that amount of capital is ex-

ceeded; he knows that bankruptcy awaits him if capital be not forthcoming.

§ 25. Astronomy became a science when men began to seek the unknown through the known, and to interpret celestial phenomena by those laws which were recognised on the surface of the earth. Geology became possible as a science when its principal phenomena were explained by those laws of the action of water, visibly operating in every river, estuary, and bay. Except in the grandeur of its sweep, the mind pursues the same course in the interpretation of geological facts which record the annals of the universe, as in the interpretation of the ordinary incidents of daily life. To read the pages of the great Stone-book, and to perceive from the wet streets that rain has recently fallen, are the same intellectual processes. In the one case the mind traverses immeasurable spaces of time, and infers that the phenomena were produced by causes similar to those which have produced similar phenomena within recent experience; in the other case, the mind similarly infers that the wet streets and swollen gutters have been produced by the same cause we have frequently observed to produce them. Let the inference span with its mighty arch a myriad of years, or span but a few minutes, in each case it rises from the ground of certain familiar indications, and reaches an antecedent known to be capable of producing these indications. Both inferences may be wrong: the wet streets may have been wetted by a water-cart, or by the bursting of a pipe. We cast about for some other indication of rain besides the wetness of the streets and the turbid rush of gutters, which might equally have been produced by the bursting of a water-pipe. If we see

¹ Mr. Bayma, *Molecular Mechanics*, 1866, p. 3, speaks of those "modern thinkers who despise the deductive method as a useless relic of the past." They must be very shallow thinkers who do not see that it is the Subjective, not the Deductive, Method which is the useless relic of the past.

² Thomson: *Outlines of the Laws of Thought*, p. 312.

passers-by carrying wet umbrellas, some still held above the head, our inference is strengthened by this indication that rain, and no other cause, produced the phenomena. In like manner, the geologist casts about for other indications besides those of the subsidence of water, and as they accumulate his conviction strengthens.

§ 26. While this is the course of Science, the course of Metaphysics is very different. Its inferences start from no well-grounded basis; the arches they throw are not from known fact to unknown fact, but from some unknown to some other unknown. Deductions are drawn from the nature of God, the nature of Spirit, the essences of Things, and from what Reason can postulate. Rising from such mists, the arch so brilliant to look upon is after all a rainbow, not a bridge.

To make his method legitimate, the metaphysician must first prove that a coordinate correspondence exists between Nature and his Intuitional Reason,* so that whatever is true of the one must be true of the other. The geologist, for example, proceeds on the assumption that the action of waters was essentially the same millions of years ago as it is in the present day; so that whatever can be positively proved of it *now* may be confidently asserted of it *then*. He subsequently brings evidence to corroborate

his assumption by showing that the assumption is necessary and competent to explain facts not otherwise to be consistently explained. But does the metaphysician stand in a similar position? Does he show any validity in his preliminary assumption? Does he produce any evidence for the existence of a nexus between his Intuitional Reason and those noumena or essences about which he reasons? Does he show the probability of there being such a correspondence between the two that what is true of the one may be accepted as probable of the other? Nothing of the kind. He assumes that it is so. He assumes, as a preliminary to all Philosophy, that Intuitional Reason is competent to deliver verdicts, even when the evidence is entirely furnished by itself. He assumes that his Intuitions are face to face with Existences, and have consequently immediate knowledge of them. But this immense assumption, this gratuitous begging of the whole question, can only be permitted after a demonstration that the *contrary* assumption must be false. Now, it is certain that we can assume the contrary, and assume it on evidence as cogent as that which furnishes his assumption. I can assume that Intuitions are not face to face with Existences; indeed, this assumption seems to me by far the most probable; and it is surely as valid as the one it opposes? I call upon the metaphysician to prove the validity of his assumption, or the invalidity of mine. I call upon him for some principle of verification. He may tell me (as in past years the Hegelians used to tell me, not without impatience) that "Reason must verify itself"; but unhappily Reason has no such power; for if it had, Philosophy would not be disputing about first principles; and

* By Intuitional Reason I here wish to express what the Germans call *Vernunft*, which they distinguish from *Verstand*, as Coleridge tried to make Englishmen distinguish between Reason and Understanding. The term Reason is too deeply rooted in our language to be twisted into any new direction; and I hope by the unusual "Intuitional Reason" to keep the reader's attention alive to the fact that by it is designated the process of the mind engaged in transcendental inquiry.

when it claims the power, who is to answer for its accuracy, *quis custodiet ipsos custodes?* If Ontology is possible, its only basis rests on the *assumed* correspondence of the external and internal orders, a basis shown by Psychology to be excessively treacherous. If all concepts are reducible to percepts, and our widest generalisations are only Representations of what originally was Presentation, Ontology has no standing place. Its data are figments—subjective constructions in which formal elements are transmuted into material elements, relations are transformed into objects, abstractions are personified and endowed with reality.

§ 27. The objects with which Ontology concerns itself do not admit of Presentation (*Anschaung*), consequently its conclusions are incapable of being verified. We can never know whether the assumed correspondence between the order in our thoughts and the order in things is a real correspondence. For example, Cause is a concept constructed out of formal elements—an inference which posits the reality of something over and above the unconditional antecedence and sequence given in Experience. Let us admit the reality; we cannot safely proceed beyond the inference; we cannot justify our transformation of this inference into an object having knowable qualities; we are not entitled to found inferences on this inference. Cause then remains a nebulous thought. If we attempt to define it, our definitions will be arbitrary; if attempt to deduce from it, our deductions will be figments. Herein lies the distinction between Mathematics and Metaphysics: the one can, and the other cannot, be reduced to Presentation; the one has, and the other has not, an objective basis and a constant verification. The material

elements of Mathematics are physical facts gained through Sense; the formal elements are simply serial dispositions of the objects; and thus the widest reaches of mathematical speculation are only the *writing out* of objective knowledge, the development of identical propositions.*

§ 28. Metaphysicians proceed on the assumption that Intuitional Reason, which is independent of Experience, is absolute and final in its guarantee. The validity of its conclusions is self-justified. Hegel boldly says, "Whatever is rational is real, and whatever is real is rational—*das Vernünftige ist wirklich und das Wirkliche vernünftig.*" And writers of less metaphysical rigour frequently avow the axiom, and always imply it. Thus in a remarkable article on Sir W. Hamilton, which appeared in the *Prospective Review*, we read that Philosophy in England has dwindled down to mere Psychology and Logic, whereas its proper business is with the notions of Time, Space, Substance, Soul, God; "to pronounce upon the validity of these notions as revelations of real Existence, and, if they be reliable, use them as a bridge to cross the chasm from relative Thought to absolute Being. Once safe across, and gazing about it in that realm, the mind stands in presence of the objects of Ontology."

"Once safe across"; this is indeed the step which constitutes the whole journey; unhappily we have no means of getting safe across; and in this helplessness we had better hold ourselves aloof

* On the contrast between Mathematics and Metaphysics, see the admirable essay of Kant: *Untersuchungen über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral*; and Apelt: *Die Metaphysik*, § 6. Compare Mansel: *Metaphysics*, p. 285. I have argued the point more fully in the chapter on Spinoza, in the *History of Philosophy*, vol. ii., pp. 211-215.

from the attempt. If a man were to discourse with amplitude of detail and eloquence of conviction respecting the inhabitants of Sirius, setting forth in explicit terms what they were like, what embryonic forms they passed through, what had been the course of their social evolution, and what would be its ultimate stage, we should first ask, And pray, Sir, what *evidence* have you for these particulars? what guarantee do you offer for the validity of these conclusions? If he replied that Intuitional Reason assured him these things must be so from the inherent necessities of the case, he having logically evolved these conclusions from the data of Reason, we should suppose him to be either attempting to mystify us, or to be hopelessly insane. Nor would this painful impression be removed by his proceeding to affirm that he never thought of trusting to such fallacious arguments as could be furnished by Observation and Experiment—tests wholly inapplicable to objects so remote from all experience, and accessible only by Reason.

In the present day, speculations on the Metaphysical Method are not, intrinsically, more rational than theories respecting the development of animated beings peopling Sirius; nay, however masked by the ambiguities of language and old familiarities of speculation, the attempt is really less rational, the objects being even less accessible. Psychology has taught us one lesson at least—namely, that we cannot know causes and essences, because Experience is limited to sequences and phenomena. Nothing is gained by despising Experience, and seeking refuge in Intuitional Reason. The senses may be imperfect channels, but at any rate they are in direct communication with their objects, and are

true up to a certain point. The error arising from one sense may be corrected by another; what to the eye appears round, the hand feels to be square. But Intuitional Reason has no such safeguard. It has only itself to correct its own errors. Holding itself aloof from the corroborations of Sense, it is aloof from all possible verification, because it cannot employ the test of confrontation with fact.

This conviction has been growing slowly. It could never have obtained general acceptance until the Metaphysical Method had proved its incapacity by centuries of failure. In the course of the history of philosophy we shall see the question of Certitude continually forced upon philosophers, always producing a crisis in speculation, although always again eluded by the more eager and impatient intellects. Finally, these repeated crises disengage the majority of minds from so hopeless a pursuit, and set them free to follow Science which *has* Certitude.

§ 29. History with overwhelming evidence proves the incompetence of the Subjective Method; Psychology with irresistible force displays the cause. It is a common mistake to suppose that this Method is followed by metaphysicians exclusively; they, indeed, have uniformly employed it, and were forced by the nature of their inquiries to employ it; but savans unhappily have shown a fatal facility in employing it likewise, and have thereby obstructed the advance of knowledge. All we can say is that only on the Objective Method has Science been successful; because only by the verification of conceptions can Truth—which is the correspondence of the internal and external orders—be reached.

With the validity of the Subjective

Method stands or falls the truth of Metaphysics, since that is the Method which alone can be employed in such inquiries. There are three grand divisions of Metaphysics, and these are Psychology, Cosmology, and Theology. It is possible to treat all three on the Objective Method by restricting them to their corresponding phenomena, and waiving all inquiry into essential causes; but this is Science, and for the present we are dealing with Metaphysics; we will therefore follow Wolf, and adopt the scholastic terms, Rational Psychology, Rational Cosmology, and Rational Theology. And as many of my readers will probably be more disposed to accept Mr. Mansel's criticism of these delusive efforts to transcend Experience than a criticism from the positive point of view, I will here borrow his remarks:—

"The aim of Rational Psychology is to frame definitions exhibiting the essential nature of the soul and its properties, as realities conceived by the intellect, underlying and implied by the phenomena presented in consciousness; and to prove by a demonstrative process that the notions thus defined necessarily flow one from another. Psychology is thus raised from a science of observation to one of demonstration [more accurately, from a science of observation to one of inference and deduction from inferences]; and its objects are transformed from phenomena presented in experience to realities contemplated by the intellect. The soul, by virtue of its essential nature as a simple substance, is shown to possess, of necessity, certain attributes as rationally conceived and defined—such as sense, imagination, intelligence, will, spirituality, indestructibility, and so forth; and the same conclusions are even demonstrated of other spiritual natures

which partake of the generic attribute of the soul." Mr. Mansel hereupon observes: "The weakness of the whole process is that it tacitly postulates as its starting-point a principle which is neither evident in itself, nor such as can be made evident by any process of thought. It assumes, that is to say, a transcendental definition of the real nature of the soul beyond and above the facts and relations which are manifested in consciousness. But how is the truth of such a definition to be guaranteed? Of the soul as a simple substance, apart from its particular modification, consciousness tells us nothing. How, then, is the abstract conception of the nature of the soul to be verified? It cannot be self-evident; for self-evidence is nothing more than the instantaneous assent of consciousness; and the assumption in question cannot be submitted to the judgment of consciousness at all. It cannot be demonstrable; for it could only be demonstrated by the assumption of a higher notion of the same kind, concerning which the same question would then have to be raised. It cannot be generalised from experience; for experience deals with the facts of consciousness only, and tells us not of what *must be*, but only of what *is* or *seems to be*. Unable to verify his fundamental definition by any reference to the reality which it is supposed to represent, the metaphysician is compelled to confine himself to the relations of the language by which it is represented."

Mr. Mansel then examines Rational Cosmology, showing that it can "contain nothing more than an analysis of general notions, and can lead to no conclusions but such as the philosopher has himself virtually assumed in his premises. The

¹ Mansel: *Metaphysics*, p. 293.

abstract notion of the world contains implicitly whatever attributes we choose to assume as its constituents; and the metaphysical or logical analysis of that notion can contain no more."

Still more incisive is his criticism on Rational Theology, which starts from a nominal definition of the Deity. "How do we know," he asks, "that our conception at all corresponds to the nature of the Being whom it professes to represent?"

§ 30. It is the slow rise of the Objective Method and its gradual extension into regions formerly occupied by the Subjective Method which the history of philosophy will have to exhibit; and the

exposition will be twofold, showing the failures of the one Method and the successes of its rival. Thus will be established the conclusion that no problem merits our attention unless its solution is verifiable, and all problems are unverifiable on the Subjective Method.

But on what does Verification rest? Before this can be answered it is requisite to discuss the much-debated question of the origin of knowledge, Have we any higher source than Experience? Is there a fountain of Truth which springs from a source independent of Experience? I shall have to treat this question by and by, but it is needed first to consider the nature of our Test of Truth.

III.—THE TEST OF TRUTH

§ 31. TRUTH being the correspondence between the internal and external order, what is the test of that correspondence? Widely as philosophers differ respecting the origin and scope of knowledge, they are unanimous in affirming that the ultimate test must lie in the verdict of Consciousness, whether the verdicts of Consciousness are, or are not, conformable with Objective Reality. Now, Consciousness is a word of delusive vagueness, and moreover some of its "verdicts" are confessedly false; the question thus arises, Which are certainly true? Metaphysicians implicitly, and sometimes explicitly,¹

assume that all "clear and distinct ideas" are true; an assumption which ill accords with the clearness and distinctness of hallucinations, and many false hypotheses. But those who are unprepared for so facile and delusive an answer as this, and who recognise that Consciousness may on occasions deliver false verdicts, desire to fix some criterion of its infallibility, *when* it is infallible.

A startling result discloses itself: Consciousness is only infallible in verdicts limited to identical propositions, or perhaps the better phrase would be propositions of equivalence—e.g., "A is A," "whatever is is."² Here, and only here, there is no fallibility. No possibility of error weakens an identical proposition.

¹ As the Cartesians. It is thus boldly stated by Tschirnhausen: "verum est quicquid concipi potest; falsum vero quod non concipi potest."—*De Medicinâ Mentis*, 1687, quoted by Ueberweg: *Logik*. This canon receives its full illustration in Hegel.

² *χρὴ τὸ λέγειν τε νοεῖν τ' ἓν εἶναι*. Parmenides: *Fragm.* v. 43. *

Unhappily, this immunity from error accompanies an infertility of knowledge. It cannot serve as guidance, for it leads nowhither. Its security is imperilled by the first step in advance; for no sooner is one thing affirmed of another than, with this commencement of knowledge, fallibility of judgment commences: what is affirmed may be erroneously affirmed; the door has been opened, and error may creep in stealthily, or stalk in imperiously. Our only resource is vigilance: we challenge every object that presents itself, no matter how insignificant its aspect, and force it to declare its quality. This vigilance is Verification, or the ascertainment that every object *is* what it declares itself to be. The famous *principium identitatis* is not indeed a *guide*, but it is a *test*.¹ Hegel, denying that it is a law of thought (allowing it only as "a law of the abstract understanding"), affirms that "no man thinks or speaks according to this law; to say that a planet is a planet and magnetism is magnetism every one holds to be frivolous."² Perhaps so; and Locke styled such propositions "frivolous";³ nevertheless, the whole stress of Verification consists in reducing propositions to identity or equivalence.

Error arises with Inference, being indeed nothing but the misstatement of the correspondence between what is inferred and what exists. Only two ways of correcting this misstatement are open; and I formerly called them respectively the Real Test and the Ideal Test. The first is a reduction of the inference to a

sensation (§ 15). The second is a reduction of the inference to a necessity of thought. Both are reductions to identical or equivalent propositions, which render their negatives unthinkable. The certainty of feeling *as* feeling cannot be disturbed. It is limpid evidence. If I feel cold, I may indeed err as to the external cause of my feeling, but not as to the feeling itself. The markings of a thermometer may assure me that the temperature of my body during ague-fit is higher than usual; but feeling is its own thermometer, and I am not mistaken in reading its indications when I simply say I *feel* colder, not hotter.

§ 32. This may seem somewhat trite; but if we follow the clue, it will lead us to large issues, one of them being the principle that the infallibility of Consciousness in each instance is the impossibility of a negative being thought. No one denies that an identical proposition is irresistible. Even Hegel, who, among other feats of logical legerdemain, showed that "Every A is at the same time not A," did not deny that A was A, whatever else it might be.

Identical propositions are frivolous when offered as enlargements of knowledge, but not when appealed to as tests of certainty. Condillac, who makes all reasoning consist in a translation of identical propositions, distinguishes between those which are frivolous because their identity is that of terms, and those which are serious because their identity is that of ideas. Thus, to say "six is six" teaches nothing, being only an iteration of the term; but to say "three added to three-yield six" enlarges knowledge, by disclosing the same ideas under diversity of terms. "When we judge two men to be of equal size, we see one thing in the two things we compare—that

¹ "Es ist ein Princip des fixirenden Verstandes, nicht der erzeugenden Anschauung; der festen Ruhe, nicht der flüssigen Bewegung." Trendelenburg: *Logische Untersuchungen*, 1862, ii. 155.

² Hegel: *Encyclopädie*, § 115.

³ Comp. Mansel: *Prolegomena Logica*, p. 191.

is to say, one size in two men, and we form an identical proposition."¹ It would be more correct to say that the identity here disclosed is that of *relation*; the ideas of three and three, and of six, and of man and man, are diverse, not identical: the terms "three and three" and "six" denote the same relations, connote different ideas. The relations are equivalent.

Our knowledge begins with the discernment of resemblances and differences: it ends in the establishment of *equations*, which are the resemblances abstracted from the differences, and raised into equivalents. At first sight no one would conclude that $2 + 1$ was the same as $4 - 1$: terms and ideas are obviously different; but that an equality exists we easily disclose: thus $2 + 1 = 3$, and $4 - 1 = 3$, and the identity becomes visible in the final equation, $3 = 3$.² If I say "Man is Man," it is an identical but uninformative proposition, having, however, irresistible certainty, because the negative is unthinkable. If I say "Man is an Animal," it is by an equation with abstraction of differences, which may possibly be erroneous and only acquires irresistible force when an equivalence in the terms Man and Animal is disclosed. That if a force of 7 will produce a velocity of 3, another force of 21 will produce a velocity of 9, is an identical proposition, although the identity has to be disclosed in an equation: we cannot say that the ideas of 7, 21, 3, and 9 are the same; but we say that the relation of 7 to 21 being $\frac{1}{3}$, and the relation of 3 to 9 being also $\frac{1}{3}$, then $3 = 3 = A$ is A. It is in the unfolding of such identities—

the exhibition of uniform relations under different signs—that mathematics, and indeed all science, consists. Mr. Herbert Spencer has shown with masterly clearness how the establishment of relations of Likeness is the process of all reasoning—passing from Likeness to Identity, as it passes from qualitative to quantitative reasoning.³ And the history of Science is the history of this process, tending towards that goal conceived by D'Alembert when he said, "L'univers, pour qui saurait l'embrasser d'un seul point de vue, ne serait, s'il est permis de le dire, qu'un fait unique et une grande vérité." We have already reached the sublime height of regarding all phenomena simply as modifications of each other, capable of being substituted for each other, being, indeed, only different *expressions* of equivalent *relations*, different *signs* of the same *quantities*. This is the grand doctrine of equivalents, which is illustrated in the convertibility of forces. It penetrates beneath the diversities of expression, and searches out the identities of nature.

The establishment of equations through abstraction of differences is the product of all reasoning. When the proposition $A = B$ is first presented, it is by no means an identical one: the obvious diversities in the two terms allow me to infer that the resemblances are by no means so great as to amount to *equivalence*. I can therefore easily think the negative of this proposition. But after repeated demonstration of this equivalence (A being indifferently used for B, and B for A, without variation in the result), the resemblance is seen to be so complete that it amounts to identity, and then the negative is unthinkable. To

¹ Condillac: *Langue des Calculs*, p. 64. Compare also D'Alembert: *Discours Préliminaire*.

² Comp. Delboeuf: *Logique scientifique*, p. 127.

³ Herbert Spencer: *Principles of Psychology*.

establish identity under variety is the office of Investigation; to *exhibit* it is the office of Proof.

§ 33. It will doubtless have occurred to the reader that since Consciousness is the ultimate ground of appeal, and since Consciousness can never transcend its own sphere, we cannot possibly have a test of Objective Truth. In one sense this is correct. We never can know more than states of Consciousness; we cannot know Objects *per se*. But to reach the Truth we have no need for deeper knowledge, since Truth is simply *correspondence* between the internal and external order. That correspondence enables us to adjust our actions to external necessities; and we assure ourselves of its accuracy by the certainty of the adjustment. The touchstone of knowledge is *prevision*. I shall shortly have to consider the nature of the proofs which assure us that the subjective order is similar to the objective order; but for the present it is enough to have shown that the subjective test of a Truth is the unthinkable-ness of its negative; in other words, the reduction to A is A.

If this disclosure startles and discomposes the reader, the fault will lie with his exaggerated pretensions to infallible knowledge, which may be regarded as one of the disastrous errors of Philosophy. Instead of being contented with that degree of relative certainty which contents Science, and which permits prevision, and the adjustments consequent on prevision, Philosophy has been restless under the suggestion of doubt, and has required that its positions should not only be impregnable, but unassailable. There are many questions beyond the reach of demonstration. The existence of an external world, for instance, cannot be proved, if the highest degree of pro-

ability is rejected as insufficient. This has been declared a scandal to Philosophy; but the scandal lies in the demand for proof—the desire for better bread than can be made of wheat. We should interdict the question from being asked in terms that cannot be answered; it has no claim to be discussed, because the evidence on which it could be decided is not within the compass of human faculty. No astronomer would attend to the sceptic who should maintain that the law of gravitation was only an hypothesis, capable indeed of colligating the facts so that calculations accurately agreed with observation, and prevision was equal to prevision, yet nevertheless, *in itself*, the process formulated in the law might be very different. The astronomer would rebuke such purposeless doubt, and would reply that the hypothesis had the highest degree of probability and the highest scientific effectiveness, so long as it was the basis of exact calculation, and received the corroboration of Observation; that a new hypothesis be proposed which exceeds it in reach and in accuracy, and the old one will give way; and not till then. In like manner the hypothesis of an external world carries conviction, and will not be disturbed until proved unsuitable to our needs.

As there is always room for error wherever the proposition is not identical, and as probability of varying degrees is all that can be attained in the majority of our conclusions, it is easy to extend the logical principle which determines infallibility where error is impossible, to the varying degrees of probability where error is possible. That which is the logical justification of A is A—namely, the *impossibility* of thinking its negative—is also the justification of a proposition constructed out of complex

and remote inferences, which have therefore only more or less probability—*i.e.*, a *difficulty* in admitting its negative. For what is the meaning of probability? The harmony of a conclusion with other and better-established conclusions: the likeness in phenomena to other well-known phenomena. When this likeness is ascertained to be complete, when the analogy is proved to be an equivalence, then probability gives place to certainty.

§ 34. A formidable opponent must now be met, and his challenge answered, before we can venture to proceed to the second part of this inquiry. That opponent is Mr. Stuart Mill, who, both in his *Logic* and in his work on *Hamilton*, argues at great length against the unthinkableness of a negative as any test at all. He considers it a lingering remnant of Metaphysics; and in his work on *Comte* expresses his surprise at finding Mr. Herbert Spencer and myself in company on this point with metaphysicians. At which *we* also feel surprised. Mr. Spencer has replied to Mr. Mill in the *Fortnightly Review* (vol. i., pp. 521–550); in the sixth edition of his *Logic*, Mr. Mill has replied to the reply. I shall only touch upon such points as concern my present purpose. Throughout the discussion Mr. Mill seems to be attacking the supposition that inconceivableness implies non-existence—that what is unthinkable cannot exist. But this does not touch us.

“Let the galled jade wince:
Our withers are unwrung.”

If Mr. Spencer's language seems occasionally equivocal, the whole scope and spirit of his speculations sufficiently proclaim his restriction of knowledge to relative knowledge, and consequently of every test as relative. He has thus

forcibly stated his opinion: “Conceding the entire truth of the position that, during any phase of human progress, the ability or inability to form a specific conception wholly depends on the experience men have had; and that, by a widening of their experiences, they may, by-and-by, be enabled to conceive things before inconceivable to them; it may still be argued that, as at any time the best warrant men can have for a belief is the perfect agreement of all pre-existing experience in support of it, it follows that at any time the inconceivableness of its negation is the deepest test any belief admits of. Objective facts are ever impressing themselves upon us; our experience is a register of these objective facts; and the inconceivableness of a thing implies that it is wholly at variance with the register. Even were this all, it is not clear how, if every truth is primarily inductive, any better test of truth could exist. But it must be remembered that while many of these facts impressing themselves upon us are occasional; while others, again, are very general; some are universal, and are unchanging. These universal and unchanging facts are, by the hypothesis, certain to establish beliefs of which the negations are inconceivable; while the others are not certain to do this; and if they do, subsequent fact will reverse their action. Hence if, after an immense accumulation of experiences, there remain beliefs of which the negations are still inconceivable, most, if not all, of them must correspond to universal objective facts.”

On this Mr. Mill remarks: “If our incapacity to conceive the negation of a given supposition is proof of its truth, because proving that our experience has hitherto been uniform in its favour, the real evidence for the supposition is not

the inconceivableness, but the uniformity of experience. Now this, which is the substantial and only proof, is directly accessible. We are not obliged to assume it from an incidental consequence. If all past experience is in favour of a belief, let this be stated and the belief openly rested on that ground; after which the question arises, what that fact may be worth as evidence of its truth?"

§ 35. The first remark needful to be made on this controversy is that, since we all three are thoroughly agreed in maintaining Experience, and Experience only, to be the ground of knowledge, and the Test of Truth to be necessarily an expression of that Experience, there can be little real opposition between us, in spite of some differences in language. Mr. Mill says that the evidence for a proposition is the uniformity of Experience; we say the same, and add that, inasmuch as this uniformity renders the negative unthinkable, it is this unthinkable-ness of the negative which becomes the Test of Truth. No validity is gained in adducing uniformity of Experience, unless there is a warrant that the experiences which are uniform are themselves beyond question; and this warrant is the unthinkable-ness of their negation. That some ambiguity will attach itself to the phrase "unthinkable" must be admitted: ambiguities are not to be avoided; and they are even more plentiful if we adopt "uniformity of experience," for that often fails to express the fact. "A is A" does not rest on "uniformity," but on intuition. My belief in my feeling as feeling is as irresistible in one case as after a thousand repetitions. My belief that a body in motion will move for ever, and in a straight line, unless it be influenced by some other body, is a generalisation from Experience, the negative of which

is unthinkable as soon as the proposition is clearly apprehended; but it cannot without ambiguity be called an uniformity of Experience, inasmuch as experiences seem momentarily to contradict it, and this seeming contradiction is only reconciled by an *abstraction of the differences*. Moreover, the test of uniformity can never be irresistible, because a possible diversity is not excluded. The test of identity is irresistible, and excludes all possibility of reversal. A is A for evermore. Not only are there many occasions on which the "unthinkableness of the negative" is a less ambiguous phrase than "uniformity of Experience," but, inasmuch as there are two schools in Philosophy, holding different views respecting the origin of knowledge, one school affirming it to be co-extensive with Experience, the other school affirming it to have an additional source antecedent to and independent of Experience, a Test of Truth ought to find its place in both schools; and this place is found by our Test. So long as discussion is confined to concrete questions, "uniformity of Experience" is as good a test as any; but no sooner does discussion turn upon certain abstract questions—*e.g.*, of Force—than the test of the unthinkable negative resumes its superiority.

Every objection that can be alleged against "unthinkableness" may equally be alleged against "uniformity." That which is unthinkable may turn out to be thinkable, that which has been uniform experience may become diversified. The examples cited of beliefs once universal and now universally rejected are examples of mistaken reliance on uniformity, and of unthinkable-ness rashly concluded where no equivalence had been established, because the elements were not such as then admitted of an equation.

It is urged that men once believed the sun to move round the earth, and that, when they did so, "the contrary was inconceivable"; yet we now know that "inconceivable" to be true. I answer: When men affirmed that they saw the sun moving from east to west, and revolving round the earth, they affirmed a truth, a subjective, relative truth, indeed, but one which, being translatable into an identical proposition, was placed beyond the assaults of scepticism, and must survive all the changes of Science. What was that truth? It was that they saw the sun moving—*i.e.*, they had certain impressions from certain definite appearances, which followed in a definite order. The fact of their having these impressions was indisputable. How far the actual order corresponded with these impressions, how far their inferences were right or wrong, it was for Science to determine. It did so by proving that these inferences wanted the character of equivalence on which certainty reposes, and by showing that other inferences gave a more consistent explanation. The belief in the *appearance* of the sun's motion continues, and will for ever continue, for it is a truth the negation of which is unthinkable; but the belief in the *cause* of that appearance (which is only an inference) will vary as explanations vary: at each stage the only absolute ground of certainty is the reduction of every inference to sensation or to a necessity of thought; and where this ground cannot be reached, our only ground is *probability*, or such harmony of our explanation with established truths as compels conviction, and thus, for the time, renders the negative, if not unthinkable, yet so difficult of acceptance as to be almost equivalent to it. When asked why a man believes that two multiplied by three

gives six as the product, the answer is, Because he must: an alternative is impossible, the negative is unthinkable; he has discovered the equivalence of the relations. If asked why he believes that chemical combinations are uniformly dependent on vibratory calorific actions, the answer likewise will be, Because he must: the negative is unthinkable now that the equivalence of the relations has been exhibited to him. *Before* that exhibition he would have had no more difficulty in thinking the negative than he would have had in thinking the product of two multiplied by three was five before he had ascertained that the relations of multiplied numbers were not the relations of added numbers. The numerical identity is seen to be absolute, whereas the identity of heat and affinity may, in the present state of science, be considered ashyepothetical. Nevertheless, in each case the Test applies.

There are, notoriously, cases of inseparable association determined by the structure of our minds, such as no enlargement of experience could loosen, no subtler analysis dissolve, unless the structure of the mind itself were altered. There are also cases of association which are loosened by the recognition of a mistake in the supposition of identity. We supposed that the thunder was identical with the explosion of wrath, and we associated with it the idea of an angry deity, until the recognised identity of thunder and electricity severed the association. Finally, it is notorious that our experience, even when uniform, is narrow; so that, when a man affirms anything on the guarantee of its negative being unthinkable, we can disturb his confidence by showing that the negative *is* thinkable, and conformable with a wider experience.

§ 36. Mr. Mill has noticed several of the inevitable ambiguities of language; yet he has not always succeeded in disentangling himself from them; as, for example, in his objection to Mr. Spencer's assertion that when he feels cold he cannot conceive himself not feeling cold. Mr. Mill replies by saying that he *can* conceive himself not feeling cold; and that he can imagine himself looking into darkness at the very moment that he is actually looking at the sun. The ambiguity of language here permits him to say this, although all that it lawfully expresses is that, while he looks at the sun, he can imagine himself (under *other* conditions) to be looking into darkness; just as it is possible for his thoughts to wander to Nova Zembla while he is sauntering down Regent Street. What Mr. Spencer meant to say was that, during the state of consciousness produced by his looking at the sun, it is impossible for the opposite state of consciousness to emerge; and this Mr. Mill has not answered, nor would he attempt to answer it.

§ 37. This digression ended, we may proceed to the second and more important part of the inquiry: the correspondence of the subjective and objective, as disclosed by our Test.

"Truth relatively to man cannot be defined as consisting in the conformity of knowledge with its object; for to man the object itself exists only as it is known by one faculty or another."¹ This is the old sceptical position, that the agreement can only be agreement of ideas. Kant adopts it by affirming that an universal *material* criterion is impossible, because the conception implies a contradiction;

but a *formal* criterion is possible, that being simply the agreement of ideas.¹

These and other perplexing suggestions are set aside by our regarding Truth as the correspondence between the order of ideas and the order of things; whether ideas and things are or are not alike, it is enough if their *order* is alike. Here an equation can be established, and certainty found. Whether planets are moved by inhabiting spirits, or are whirled in a sling by some distant spirit, whether they are ellipsoid solids or unextended centres of force, whether they are in any respect like or unlike our conception of them, is of little consequence to us, so long as we have ascertained the *order* of the phenomena, the law of their motions. So absolute is this abstraction of differences, that we may admit the real law to be different from the law we conceive, provided only that there is equivalence—*i.e.*, that they numerically correspond, so as to admit of calculations which agree with observation. Hence all that Science needs is correct formulas of the *order* of phenomena: these are truths. How these formulas are reached we have not to consider here; when reached, they are placed by the Test beyond the conflict with doubt.

§ 38. It thus appears that the question which has been debated since the beginning of Philosophy may now receive a decisive answer. This was impossible hitherto, because of the terms in which the question was put. We must no longer seek Truth in the conformity of ideas with objects (which is impossible), nor in the agreement of ideas with ideas (which is a purely subjective condition, carrying no objective validity); we must seek it in the equation of the internal

¹ Mansel: *Prolegomena Logica*, p. 241.

¹ Kant: *Logik*. Einleitung, vii.

and external orders, abstracting all differences. And the proof of this equation is the corroboration of calculation. When we can employ a formula with absolute precision, using it as if it were identical with the order of things, and applying it to events which are to come, we are certain that this formula expresses equivalence and is a truth.

Subjective agreement is as perfect in hallucination as in perception, which M. Taine happily calls "*une hallucination vraie*."¹ How, then, are we ever to be certain that our formulas are true—that the order of our ideas is in correspondence with the order of things? What is the bridge over the gulf between the subject and object? Let us pause awhile to consider.

I am seated in my study, and, on raising my head from a book, see a man slowly pass out of the room, cross the lawn, and seat himself on the garden wall. This has been the order of my sensations. Considered subjectively, the truth is indisputable. It is an identical proposition to say that I saw what I saw, felt what I felt. But can I with equal certainty say that what I saw had a corresponding reality, that the objective order was the same as the subjective? Not so. As yet no proof exists. I may have had an hallucination. To prove that my subjective state had its correspondent objective, some corroboration is needed. My wife enters the room, and she also sees the man on the garden wall. This proves that I have not had an hallucination of vision; but it does not prove the reality of my inference. Her testimony is not final, because she may misinterpret the appearances, as I mis-

interpret them. A dog comes in, and, seeing the figure on the wall, begins barking furiously. This shows that, although wife and dog may misinterpret the appearances, there is *some* external object. If I could touch it, the corroboration of one sense by another would be valuable; I can, at any rate, speak to it. I do so; and, asking the man what he does there, he replies by some insulting jest. My conviction becomes deepened with each corroborating fact; and when, finally, I order my servant to fetch a policeman, and the policeman comes, and carries off the struggling intruder, the impossibility of my thinking that the vision had not an objective reality is absolute. When all the senses converge, when all the evidences corroborate, we are forced to believe in the objective reality, unless we declare all existence to be a dream.

§ 39. Inasmuch as all knowledge is the expression of Experience, the truth of any proposition respecting things can only be tested by some term of Experience. The elements of Inference must be severally reduced to Feeling, or must be established by Reason. If I cannot reduce an Inference to Feeling, I can approach it through the Feeling of others; and their corroboration is the stronger in proportion as it concerns the objective nature of the thing inferred. I want no evidence of the fact that sugar is sweet to me; but if everyone everywhere declares sugar to be sweet, Reason tells me there must be some objective something corresponding with this sensation; and when I find that this something, which exists in various fruits and various substances, has in all these the same atomic elements, I have got hold of an equation between the internal and external orders.

§ 40. Mr. Mill insists that a necessity

¹ Taine: *Les Philosophes Français du XIX^{ième} siècle*. 1857.

of Thought cannot be accepted as a necessity of Things. Perhaps not; perhaps it can. We are incompetent to decide. To decide it would be to have absolute knowledge. Let me ask, why should not a necessity of Thought be sometimes the expression of an equivalent necessity of Things, since it is the product of Experience, which is determined by objective conditions? And even if we grant that a subjective necessity can never carry with it an objective necessity, we must still say, This is what we are compelled to think, and this for us is Truth. Not that I "erect the incurable limitation of the human conceptive faculty into laws of the outward universe." Far from it. I simply erect them into "laws of the conceptions we form of the universe"; and wherever we find these conceptions so far corresponding with external laws that they enable us to foresee results, and modify phenomena with certainty, we may declare the equivalence of the law and the conception. In such a case the necessity of Thought is the expression of a necessity of Things. The laws of Number, Form, and Motion are necessities of things no less than of Thought, not perhaps existing objectively in the same forms as they exist subjectively, but having an equivalent order; and the proof is that we *discover* them in Things, we do not put them there.

§ 41. And this leads me to remark on Mr. Mill's criticism that I "set up acquired necessities of thought in the minds of one or two generations as evidence of real necessities in the universe." Undoubtedly, the laws of Number, Form, and Motion are *discoveries*, and whether these were early or late in being made nowise affects their truth. Because men, until within the last twenty

years, failed to see the equivalence of Heat and Motion, are we to conclude that this equivalence is not a necessity of things? Did not the order in Things proceed on this law (or on a corresponding law) during all the centuries in which men's conceptions of the order were very different? And now that men's conceptions have been readjusted, and they have detected the identity of Heat and Motion, has not the law become a necessity of Thought no less than of Things?

§ 42. What Mr. Mill justly condemns is the tendency to accept necessities of Thought as necessities of Things, *before they have been proved to be identical*. Against this tendency to assume that the order of ideas corresponds with the order in phenomena, and that what is logically valid will always be objectively valid, I have repeatedly protested in the course of my History; for, indeed, the whole body of Metaphysics is a result of that vicious tendency. Nevertheless, believing that Truth is possible—according to the definition I have given of it—and that a correspondence between the internal and external orders, though difficult of attainment, has a decisive Test, I have shown that a proposition is *absolutely true* only when its terms are equivalent, and that as this rests on the impossibility of our thinking a negative of the proposition, the varying degrees of *probability* will depend on the possibility of admitting a negative. This latter condition varies, of course, with the enlargements of knowledge; that negative which was easily thinkable at one epoch becoming unthinkable at another, and that which was unthinkable in the infancy of Science becoming not only thinkable, but irresistible in its maturity. That men should be able to stand at the antipodes was formerly quite unthinkable; they

were conceived under conditions which would necessitate their falling away into space. Science has not disproved *this* necessity, but has displaced the erroneous conception of the facts on which the proposition rested, and replaced it by another proposition. (Compare § 67.) If we now conclude that men will stand as well on the earth at the antipodes as they stand beside us, it is because we believe the conditions to be equivalent in both places, and with equivalent conditions necessarily arise identical results.

§ 43. No one supposes that it will guarantee a truth to say simply that we are compelled to believe it, without exhibiting our grounds of belief.¹ We must show the evidence to be irresistible, displaying our belief as a necessary conclusion, not a mere prejudice or tradition. In adducing our evidence, we have to establish a series of identical propositions; and it is precisely because

we cannot do this in complex questions that demonstration halts.

§ 44. We shall have to resume the subject of necessity in a future section, when discussing Necessary Truths in relation to the origin of Knowledge; for the present, therefore, the argument may close. What the preceding paragraphs have attempted to establish is the possibility of Truth and its Test. This Test is absolute and relative: absolute, when the negative of a proposition is unthinkable because the proposition itself is an identical one; relative, when the negative, though not positively unthinkable, is nevertheless so opposed to existing knowledge as to be inadmissible, in which case the Test only reveals a high degree of probability. But in no case is the Test a means of enlarging knowledge; it only determines the degree of certainty. How knowledge is enlarged we have already seen in the exposition of Method.

IV.—SOME INFIRMITIES OF THOUGHT

§ 45. If History is Philosophy teaching by example, the examples of infirmity disclosed in the various systems which have gained acceptance should be care-

fully analysed. I do not propose to enumerate them here, nor to write a treatise on Error, but a few instructive examples may be specified.

And first of that tendency, already noticed, § 16, to commute the formal into material elements, to raise Relations out of their proper category, and transport them into the category of Things. This is the parent of Metaphysics. It is often called the tendency to "realise abstractions." Having combined certain elements of particular experiences into a single conception, we treat the concept

¹ Kant properly objects, that the proposition "what we cannot but think as true must be true" is no ground of proof, but only a confession of inability. "Nun giebt es freilich wohl viele unerweisliche Erkenntnisse, allein das Gefühl der Ueberzeugung in Ansehung derselben ist ein Geständniss, aber nicht ein Beweisgrund davon, dass sie wahr sind." *Unters. über die Deutlichkeit der Grundsätze*. Werke, i. 89, ed. Hartenstein, 1838. (This is the edition I usually refer to.)

'as if it were an individual object.'¹ The belief in Universals, which was accepted for centuries, is a well-known example. Professor Bain has truly remarked that 'the more we analyse or decompose concrete objects into the abstract qualities that make them up, the more difficult it is to remount to the concrete. Hence the most arduous attempt of all is to make actual nature rise up out of scientific or technical language—to conceive minerals from a book of mineralogy, and the parts of the human body from anatomical description.'² Why this difficulty? Because we have to undo what has been laboriously done—to immerse the abstractions in the concretes from which they were abstracted. And yet "this process of resolving natural aggregates into their ultimate abstractions" is the great instrument of Philosophy. These abstracts represent the *constants*; whereas the concretes are the *variables*; and these variables, by their multiplicity and change, confuse the eye and distract the attention. But if, as our infirmity tends, we give objective independence to these abstracts, we distort the order of Things; in other words, we follow the movements of Thought, instead of following the movements of Things.

Now, in Science, when pursued on the Objective Method, we are constantly

made aware of this tendency, and are forced to correct it by our failures in reconciling calculation with observation; but in Ontology such correction is impossible; accordingly, it is in Metaphysics that we see the most frequent exhibitions of the infirmity.

§ 46. A good example of the tendency is the once popular but now gradually expiring doctrine of a Vital Principle.

Life is the connexus of the organic activities: a complex whole of various particular facts, abstracted from those particulars, and raised into objective reality. Each organ is composed of constituent tissues; each tissue has its constituent elements; each element, each tissue, has its specific properties; the activity of each organ is the sum of these properties; the organism is the connexus of the whole. Life is thus a concept formed out of particulars. And because the functional relation of each organ to the whole, as of each tissue to each organ, is necessarily dependent on the established connexus, both terms of the relation (parts and whole) being inseparable, some physiologists have argued that the connexus is prior to the organs, the whole *generating* the parts, instead of being a *generalisation* from the parts.

Thus, forgetting the simple teachings of experience that Life is the connexus of various phenomena—an abstract from the phenomena—men have realised the abstraction, declared the *resultant* to be a necessary *antecedent*, and have constructed an Entity out of a Relation. They speak of a Vital Principle anterior to, and independent of, all the organic activities—a Plastic Force, which mysteriously shapes the elements' into tissues, the tissues into organs, the organs into an organism, and which, while thus

* "Toutes les fois que certains éléments d'une représentation sont distingués par une analyse, ou groupés systématiquement dans une synthèse, un tout se forme et se pose; rien de mieux; mais on ne s'arrête pas là; on entend que les relations, sous condition desquelles cette opération s'est faite, disparaissent comme l'échafaudage inutile d'une édifice achevée, et que le tout qu'on a constitué demeure à part, debout, comme de lui-même, en lui-même."—Renouvier: *Essais de Critique Générale*, 1854, i. 9.

• ² Bain: *The Senses and the Intellect*, 2nd ed., 1864, p. 603.

SOME INFIRMITIES OF THOUGHT

building up the parts, endows them with its own special property—vitality. "In the absence of this Principle," they argue, "all the activities which could be manifested within a tissue, or an organ, would be chemical and physical, not vital. The presence, therefore, of the Principle is presupposed in every atom of the vital organism; and this presence is not a resultant, but a cause."

§ 47. Erroneous as this hypothesis seems to most biologists at the present day, it has been strenuously supported, and even still finds eminent supporters. The main source of its persistence lies in the infirmity we are now considering. Because vital phenomena are only observed under a *special* conjunction of conditions, in which the forces (that are elsewhere observed acting in different directions) are seen to have a specific direction impressed on them, we form an abstract of this special conjunction, and then easily fall into the error of realising our abstraction, giving it objective independence. But let us remount to the source of our abstraction. Let us immerse the abstract once more in the concretes from which it was drawn. Let us follow the movements of phenomena, and the illusion will vanish.

A strip of muscle detached from the organism will manifest all its vital properties, so long as its specific constitution as muscle remains, so long as it resists disintegration; it will absorb oxygen, exhale carbonic acid, and contract under appropriate stimulus. A gland removed from the body continues to be a small laboratory of chemical change, secreting as it secreted in the organism. A nerve removed from the body continues to manifest its specific property of Neurility, and will cause a muscle to contract if stimulated; nay, a nerve-centre removed

from its connection with the rest of the body will continue to manifest its specific Sensibility; a decapitated bee will sting with its headless body, or bite with its bodiless head.

These phenomena prove that what each part does *in* the organism, each part does *out* of the organism. In other words, the Life of the animal is the sum of the particular vital activities; not a power anterior to, and independent of, these activities. What is Life, if it is not the sum of vital phenomena? And if it is the sum, it cannot be independent of the integers of which it is the sum. The abstract is of course different from any one of its concretes. The organism as a whole—a combination of activities—presents phenomena which cannot be presented by the parts separately. The animal which has its muscles, glands, nerves, and nerve-centres, all harmoniously working together in one body, in one connexus, is capable of manifesting complex phenomena which could not be manifested by any of its separated organs; and the only question that remains is, whether there may not be a Vital Principle which unites these parts into one harmonious whole? Let the question be distinctly stated: Do we mean by Life the *source* of all vital phenomena, or is it simply a personified expression of the phenomena? If the former, then

"La force vitale peut être conçue comme une formule laconique destinée à exprimer en un seul mot les caractères propres à la matière organisée."—Béclard: *Physiologie*, p. 13. "La vida de la materia es una *función*: depende de sus elementos y cada uno de sus elementos depende de los demás y del todo que constituyen.El organismo entero es una función de funciones orgánicas, un conjunto que depende de sus partes, no pudiendo perder las todas, sin desaparecer como tal conjunto."—Nieto Serrano: *Bosquejo de la Ciencia Viviente*, p. 337.

we mean that anterior to all vital phenomena there is a Principle, or Entity, which is in no wise dependent on these phenomena; and on this Principle all phenomena depend, as effects depend upon their causes.

§ 48. Before considering this aspect of the old doctrine, there is one objection which must be anticipated. Seeing each part of the organism capable of manifesting vitality, the vitalists may claim that fact as peremptory evidence of the truth of their doctrine. "The parts are alive," they argue; "but how alive? They have been *endowed* with vitality by the Principle which forms the organism; not holding it from any virtue in themselves, but receiving it from the source of all organic activity. Indeed, the conclusive proof of the existence of a Vital Principle is the fact that every atom of the organism is interfused with life."

I will meet this argument by the simple question: Is the Vital Principle identical with, and co-extensive with, the Life manifested by the whole organism, or is it simply the Life manifested by each part? When we speak of a Vital Principle, do we mean the Life of the animal, and is that the same thing as the Life of an isolated muscle, gland, or nerve? Obviously not. In the one we group together various phenomena of sensibility, contractility, nutrition, reproduction, development, and decay. In the other we group together only certain special phenomena. The muscle will contract, will absorb oxygen and exhale carbonic acid; but it will not nourish itself, it will not grow, it will not reproduce other muscles, it will not feel, nor think. If we admit that there is a certain community in all parts of the organism, a community which expresses a fundamental identity, the parts being differen-

tiated from one common mass, we must nevertheless admit the great diversity in the various parts. The organism is the synthesis of these parts, and Life is the synthesis of their properties.

To make this position clearer, let us analyse our knowledge of a locomotive. We find that the fire will heat water out of the machine as in it; the water, when raised to a temperature of 212° F., will pass off into steam; the expansion of this steam will force a piston; the crank will turn a wheel; the wheel will roll a carriage. The skilful adjustment of these various parts results in a whole which we name a locomotive. But no one supposes that the phenomena presented by the locomotive could be presented by any one of its parts. Still less does any one suppose that the phenomena are due to a Locomotive Principle, independent of the parts, which created and adjusted the parts. The engine-maker who adjusted the parts did not give them their properties; he found them, and used them.

Now, the only point in which this parallelism is incomplete is in the community which runs through all the parts of the organism, and is not found in all parts of the machine. As I said before, this arises from the organism being constituted by differentiations of a substance originally homogeneous; whereas the machine is constructed of materials originally heterogeneous. The one was evolved; the other made. If, therefore, the Vital Principle be that which is common to all parts, we shall have to simplify our conception of Life, and reduce it to the properties of a blastema. Eliminating many of the great phenomena of organic activity, we are left with a structureless substance having the properties of Assimilation and Disintegration, from which Development, Reproduction,

and Death result. Nor will even this simplification much assist the doctrine of a Vital Principle. Life is only known in dependence on substance; its activity is accelerated or retarded according to the conditions in which the chemical changes of the substance are facilitated or impeded, and it vanishes with the disintegration of the substance. What, therefore, remains but to conclude that Vitality is the abstract designation of certain *special* properties manifested by matter under certain *special* conditions? Thus conceived, the ascending complexity of vital phenomena with an ascending complexity of organic structure, in harmony with certain special conditions, becomes intelligible, and Vitality distinguishes the simplest living monad no less than the most complex animal organism. Community is thus reconciled with diversity.

§ 49. Metaphysical ghosts cannot be killed, because they cannot be touched; but they may be dispelled by dispelling the twilight in which shadows and solidities are easily confounded. The Vital Principle is an entity of this ghostly kind; and although the daylight has dissipated it, and positive Biology is no longer vexed with its visitations, it nevertheless re-appears in another shape in the shadowy region of mystery which surrounds biological and all other questions. I indicated this region of mystery when I said that the organism differed from all other mechanisms in being evolved from a homogeneous substance, and not made out of heterogeneous substances. How comes this possibility of evolution? Whence the adjustment of part to part and function to function? If the machine requires a mechanist to dispose and adjust the parts, does not the organism require its mechanist or Plastic Principle?

In presence of this question the metaphysiologist, although he may have given up his belief in an Entity, a Life independent of living substances, has ready recourse to another form of the same belief, and substitutes for the Vital Principle the conception of a Plan or *Scheme*, according to which the physical forces are coerced into an organic unity. The same conception has been applied to the Cosmos. It may be here considered solely in reference to the organism, though students will have no difficulty in extending the argument.

§ 50. At the outset note a false analogy, arising from a misconception of Evolution. We see an architect arranging a plan for a house, and a builder arranging the materials in accordance with this plan. Finding in an organism a certain adjustment of parts, which may be reduced to a plan, we are easily led to conceive that this plan was made before the parts, and that the adjustment was determined by the plan. This is what logicians call *ὑστερον πρότερον*, and ordinary men "putting the cart before the horse"; the resultant is transformed into the cause.

We not only see that the architect's plan determined the arrangement of materials in the house, but we see why it must have done so, because the materials have no spontaneous tendency to group themselves into houses; that not being a recognised property of bricks, mortar, wood, and glass. But what we know of organic materials is that they *have* this spontaneous tendency to arrange themselves in definite forms; precisely as we see chemical substances arranging themselves in definite forms, without the intervention of any extra-chemical agency.

Observe: either the Plan is independent

of the materials, in which case it is an extra-biological agency; or it is the generalised concept of the indwelling tendencies of matter, when under definite conditions. In the one case the analogy of the architectural Plan is correct; but this destroys the idea of *evolution*, and substitutes that of *construction*. In the other case the analogy is seen to be founded on a misconception of organic facts; the parts with their adjustments *evolve a plan*, and are not *constructed after a plan*. From an observed *nexus* men rashly infer a *nisus*, from an actual conjunction a previous intention. If this conception of a Plan be admitted in Biology, it must equally be admitted in Chemistry, Physics, and Astronomy. Matter and Force not being mysterious enough, we must add a new mystery of architectural Plan, shaping Matter and directing Force. There is, however, this dilemma: Is the Plan in itself a shaping Power? It is then only another name for the Universal Cause. Is it without specific power? It is then an impotent overseer.

§ 51. According to the first answer, the Plan is identified with God. But this introduction of God, besides its pantheistic issues, is an evasion of the real question. We did not ask whether God fashions all things, organisms as well as worlds; but whether each organism and each chemical species has over and above its constituent elements and properties a shaping Idea, an independent Plan, which gives specific direction to the constituent elements and properties? This is the question. There are two answers: 1st, *the teleological*. There must be such a Plan, because our examination of an organism discloses its resemblance to mechanisms which we know to have been constructed on a Plan, and we con-

clude that each adjustment was intended to effect its purpose. 2nd, *the psychological*. The conception of a Plan, when it does not arise from a false analogy (§ 50), is a generalised expression of the observed facts of organic independence: the facts of a nexus. Science finding it indispensable to co-ordinate all the facts in a general concept, such as a Plan, men are led by an infirmity of thought to realise the concept; and having first used it only as a convenient expression, they grow into a belief of this nexus being also a *nisus*.

§ 52. This argument will perhaps be met by the distinction of Potential and Actual, which has played so prominent a part in Metaphysics, and which is itself one of the products of the infirmity now under examination. It will be said "the Plan pre-exists, not as an actual objective fact, but as a Possibility, a Potentiality."

Let us first see what experience tells us of the development of an organism. The ovum and the seed are starting-points from which an animal and a plant may, *under requisite conditions*, be developed. This is the expression of our experience. But now observe the jugglery of thought! One of the elements of the whole result, absolutely necessary to the result (indicated by italics in our statement), is quietly eliminated, and never afterwards restored. By a regressive movement of Thought we carry the developed organism back again to its starting-point (*minus* the conditions of development, therefore), and form a concept of the ovum and seed as *potentially* containing the animal and the plant.

At first this is mental shorthand, useful as an artifice. Unhappily it soon loses its position as an artifice, and passes into

a fallacy. The elements which have been omitted are never restored (compare § 54). If we restore them, if we write out the full meaning of our shorthand notes, what do we read? Assuredly not that the lineaments of the animal are actually present in the ovum. In the ovum they do not exist. When you say that they exist *potentially*, what is the translation of your phrase? It is, that under a given history—under a successive series of particular conditions, a special result will ensue. If we know the conditions and their succession, we may foretell the result. The law of causation determines it. Any variation in any one of the conditions will be followed by a corresponding variation in the result. All this history of development is omitted in the shorthand of Thought. The result is foreseen, because, the conditions being taken for granted, their action is anticipated.

But nature must not be thus distorted and compressed. If our feeble faculties make artifices necessary, we must not forget that they are artifices; we must restore, in a final elaboration, what, in a preliminary elaboration, we rejected. The facts of Nature remain whether we reject them or accept them. Potential existence is ideal, not real. If you adjust your rifle accurately, the animal aimed at may be *potentially* dead, but *is* alive; and the merest trifle, the swerving of your hand, or the dampness of your powder, puts an end to the potential existence. A fact is not a fact until it is accomplished. Nothing exists before it exists. This truism is disregarded by those who talk of potential existence. The conception of a plan preceding the execution of a work does not prove that the plan pre-exists *in re*. The realised plan does not begin to exist, out of

Thought, until the work is begun, and is completed with the completion of the work.

§ 52. Potential existence is subjective only. My forecasts of the results of a history may be true or false. I foresee the result by grouping together the facts which *will be* with the facts which *are*, and I make one concept of them. In doing so I annihilate history. I transcend the conditions of Time and the necessities of Causality, and conceive as simultaneously completed that which in Nature must be successive and graduated. So far well. But if I desire to ascertain the actual facts, I must follow the course of Nature, and restore that history which has been left out of sight. Following the development of the ovum, historically, I observe that not only are certain conditions indispensable, but that every variation in the requisite conditions produces a variation in the result—modifies the structure of the animal, arrests or accelerates its development. If I varnish the shell of an egg, I prevent the embryo from developing into a bird. If I varnish one part of the shell, I so alter the requisite conditions that the result is a bird incapable of living, or curiously malformed. In altering the history I have changed the historical result. What, then, has the Plan effected? The Plan has not come into existence. If the conjunction has thus altered with the altered conditions, how can it be the fulfilment of a Plan irrespective of conditions? and a Plan which is strictly dependent on conditions is not a *nisus*, but a *nexus*. The inevitable conclusion is that Plan neither shapes the Organism nor determines the conditions through which the development takes place. In mathematical phrase, the Plan is the *function* of Development and Developing

Conditions, and is variable with every variation of either.¹

The fallacy that a concept has independent existence prior to the particulars out of which it is formed, or that a Plan exists as a potential before it exists as an actual, will frequently be met with in the History of Philosophy. Indeed, Aristotle's distinction of *δυνάμεις* and *ἐνεργεία* was for centuries regarded as a luminous guide.

§ 53. An infirmity closely connected with the foregoing is forgetfulness of the necessity we are under of dislocating the order of Nature, by Analysis and Abstraction; which artifice, since it leads to discovery, may be copiously used on condition of our remembering that it is an artifice, and that the order we have dislocated must be finally restored, if the order in Thought is to correspond with the order in Things.

Science is distinguished from Common Knowledge by its wider reach and more systematic structure, and also by its conscious employment of artifices which our infirmity renders indispensable, and which the unscientific mind employs unconsciously. Abstraction is one of the necessary artifices of research; and the man of science is conscious of what he

is doing when he abstracts certain phenomena from the mass presented to him, and proceeds to deal with those abstractions as if they were the whole reality. Ordinary men do the same, but are unconscious of doing it.

Why must we make this preliminary abstraction—why deviate thus from the actual facts, in order to understand the facts we falsify? The answer is simple. Unless some such simplification be made, all search will be hopelessly baffled by the complexity of phenomena. The parrots of Bacon chatter about Observation; but Observation of cases, however patient, and prolonged, will never suffice to disclose the Laws which are enveloped in the cases, and which form the real aim of Science. And what are Laws? They are the *constants* in phenomena, and can only be separated from the *perturbations*, due to other Laws, by a process of abstraction which sets aside all the variable accidents and individual peculiarities accompanying and determining each special case. Let us have Observation, by all means; but of what? Of ore and dross together? or of ore and dross separated? The constants found in every case must be separated from the variables found in varying cases. The mineralogist separates the ore from the dross; and the philosopher separates the constants from the variables. Even the Laws of Motion and Gravitation, universal as they are, could never have been discovered by observation of cases of motion and gravity; a preliminary abstraction eliminated all consideration of the variable resistances. The Laws of chemical affinity could never have been disclosed to Observation, except by a preliminary Analysis, which tore one element away from another, and studied each separately.

¹ Nieto Serrano is worth citing on this question of potentiality: "Es, pues, la fuerza potencial una fuerza que no es tal fuerza, pero que puede serlo; es la posibilidad sobrepuesta por la inteligencia á todo orden determinado. No es la posibilidad no es absoluta, no es una indiferencia completa respecto del porvenir: esta indiferencia se halla limitada por los hechos, por las fuerzas actuales, por las que aparecen en la totalidad presente, como presentes ó como pasadas, y semejante limitacion constituye una probabilidad, que determina de algun modo la potencia." *Bosquejo de la Ciencia Viviente*, p. 269.

Every one knows that unless Kepler and Newton had boldly disregarded all consideration of planetary perturbations which were nevertheless essential facts in planetary movements, they would have been unable to detect the planetary Laws. But this preliminary falsification was rectified by their successors, who deduced the perturbations from secondary gravitations. It is this twofold process which I propose to erect into a logical canon applicable in all inductive inquiry,¹ the Canon of Restitution:—

§ 54 Every investigation requires for its completion that Analysis be succeeded by Synthesis—i.e., the preliminary abstractions be succeeded by a restoration of the rejected elements, so that the synthesis be made to correspond with reality.

In establishing the Laws of Mechanics philosophers falsify the facts to the extent of assuming that the lines of direction are undisturbed, and that the materials

are perfect. In reality, this is never so; and the practical mechanic has to rectify the rational Law by the restitution of the discarded elements. His action is synthetic, and his calculations must be so likewise. At peril of ignoble failure, he has to ascertain what are the actual lines of direction, as determined by the rational Law and the perturbing resistances; he has also to ascertain to what extent the materials are uniform.

§ 55 Two illustrations will suffice to exhibit the neglect of this canon. The undulatory theory, of light and heat, is justly regarded among the triumphs of modern science. It starts from oscillating atoms having no dimensions—mere mathematical points. This is a bold disregard of concrete observation; points without form or size are abstractions so entirely removed from reality as to be unimaginable. Nevertheless, Analysis occupied solely with oscillations, and discarding the oscillating atoms, as if they were not elements of the synthesis, has furnished Laws of vibration that explain many of the most remarkable phenomena of light and heat—e.g., polarisation, refraction, interference. This success justifies the falsification. But inasmuch as the theory fails to account for other important phenomena, the Canon of Restitution suggests that the failure may lie in this falsification, and that the outlying elements may furnish a solution of the unexplained difficulties. If the atoms exist at all, it is unthinkable that they should not have certain geometric properties, and these geometric properties entail dynamic properties. If they have Form, they must have a corresponding Movement. As it is impossible to conceive them unextended, as they must have size and form, they must have the motions deducible therefrom.

¹ Compare Auguste Comte: *Synthèse Subjective*, p. 604. Some time after this Canon with its illustrations had appeared in the *Fortnightly Review*, I found this passage in Comte's *Politique Positive*, vol. i., p. 426: "Les événements ne pouvant s'étudier que dans des êtres, il faut écarter les circonstances propres à chaque cas pour y saisir la loi commune. C'est ainsi, par exemple, que nous ignorions encore les lois dynamiques de la pesanteur si nous n'avions pas fait d'abord abstraction de la résistance et de l'agitation des milieux. Même, envers les moindres phénomènes nous sommes donc obligés de décomposer pour abstraire avant de pouvoir obtenir cette réduction de la variété à la constance que poursuivent toujours nos saines méditations. Or ces simplifications préalables sans lesquelles la vraie science n'existerait jamais exigent partout des restitutions correspondantes quand il s'agit de prévisions réelles." Although I had not marked the passage previously, nor realised its full significance, it is highly probable that I was unconsciously guided by it in the construction of the canon.

But these facts have hitherto been disregarded. Let them be restored, and let mathematical analysis be directed to the problem under this new aspect. The movement of the wave—i.e., the movement of translation—has been sufficiently analysed; now let the movement of the atom—i.e., the movement of rotation, according to Poinso's immortal principles—be investigated. In the mechanics of translation the form of a body is indifferent, but in the mechanics of rotation the form is everything. If the investigation in this direction failed to clear up the present difficulties, it would at least have this result, that it would prove the rotation of the atoms to be legitimately disregarded in the theory of Light and Heat, because not sensible factors in the result.

§ 56. The second illustration of our Canon shall be the question of the Origin of Species.

Are Species variable or invariable? This question resembles that of planetary perturbation. The abstract Law of Reproduction—that Like produces Like—is unassailable as a Rational Law; and it points to the fixity of Species as a fundamental truth. But the Law is Rational, not Natural. It abstracts the Organism from the Medium—one factor from its co-efficient—and thus violates the synthesis of Nature, which never yet presented an Organism independent of the Medium in which it lived. And there is matter for meditation in the fact that only in modern Biology has the necessary reaction of the Medium been steadily conceived as one of the necessary elements of every biological problem; formerly the Organism was always conceived as if it were no less independent really than it was ideally.

The restitution of the discarded

elements—namely, the reaction of the Medium and the Struggle for Existence, which act as perturbations of the biological Law—brings forward this problem: What is the sweep of the perturbations? Can these perturbations be assigned to some secondary biological Law (the reaction of the Medium), and can they, by accumulation, determine a change in the primary Law?

At present we have two groups of thinkers, each relying on a group of indisputable facts: one proves the constancy of forms, and another proves the variability of forms. The complete theory must include and reconcile both groups. For this it is necessary that a rational Biology should elaborate a theory of the Organism, and a theory of the Medium; then the Law of Reproduction being completed by the restitution of the Perturbations, also reduced to Law, we shall have a possible synthesis explaining all the cases.

§ 57. The Canon just exhibited is needful as a corrector of our natural infirmity, which first makes the separation necessary, and then forgets that the restitution is no less so. The anthropomorphic infirmity, which suffuses Objects with our Feelings, making Cause inseparably associated with Effort, and Attraction with Desire, is too well known to need more than a passing mention here. It is a fertile source of metaphysical speculation.

Another is the strange assumption, that because knowledge is the bringing of the Unknown under the categories of the Known (for only thus can the Unknown be thinkable at all), therefore we can discover the further relations of this Unknown. For instance, Kant, in the preface to the second edition of the *Kritik*, says that Will, the phenomenon,

is not free, because it is subject to the laws of phenomena; but Will, the thing in itself, may be thought as free, because no longer subject to the laws of phenomena. Now, he admits that things in themselves are beyond knowledge. If we cannot know the *Ding an sich*, how can we predicate anything of them? In his *Prolegomena* he has this illustration of analogy: "I can never do anything to another without thereby giving him the right to do the same under similar conditions; just as no body can act on another without thereby causing an equal reaction on itself. Here Right and Force are two entirely different things, but there is a complete resemblance in their relations. By means of such analysis I can consequently attain conceptions of the relations of things, which things are absolutely unknown to me."¹ If the things were absolutely unknown, how could the relations, upon which the analogy is founded, be known?

The fact is, men are constantly affirming certain existences to be Unknown and Unknowable, yet in the same breath affirming relations of them which presuppose knowledge. They will admit that Matter, as *Ding an sich*, is absolutely and necessarily extruded from the sphere of possible knowledge; yet they will proceed to argue that it must, or must not, be constituted of discrete atoms—that these atoms are, or are not, in contact. They will admit that it is impossible for us to know God otherwise than through Revelation. Yet they have not the slightest misgiving in affirming many things of God's nature, interpreting his intentions, without any warrant in Revelation. Thus implying that they know what they have declared unknowable.

This list of infirmities might be extended, but it may close here. Others will meet us in the *History of Philosophy*.

V.—NECESSARY TRUTHS

§ 58. THE great question which has been debated in the schools respecting the Origin and Limits of Knowledge has of late years resolved itself very much into a debate respecting the nature of Necessary Truths. The philosophers who hold that, over and above the results of Experience, in its widest acceptance, we have truths of a higher authority and a larger reach, springing from a nobler source, invoke, as decisive evidence of

their opinion, the existence of Necessary Truths, which cannot (they affirm) be the results of Experience.

This position rests upon a radical misconception of Experience, and a psychological misconception of the nature of Necessary Truths; both of these mistakes it will be important to clear away. We may admit, at the outset, that the mind is in possession of many ideas which could never have been directly given in Experience, if Experience be restricted to Sense. The restriction, however, is unwarranted. Ratiocination is as much

¹ Kant: *Prolegomena zu jeder künftigen Metaphysik*, § 58. Werke, iii. 285.

an organic function as Sensation. Just as the base line gives the indirect, yet certain, measure of the inaccessible line of the triangle, so from the data of Experience may we measure consequences which are not directly accessible. But the analogy must not be perverted: the base line only gives us the directly inaccessible line, it does not give other lines; the data of Experience only give the directly inaccessible consequences of the data, not the consequences of *other* data; and it is owing to an imperfect appreciation of such limits in the deduction of the unknown from the known that the doctrine of Necessary Truths, independent of Experience, has attained currency.

§ 59. What is Experience? It is the sum of the actions of Objects on Consciousness; or—to word it differently—the sum of the modifications which arise from the relations of the Sensitive Organism and its environment. In this sum are included:—1st. The direct affections of Consciousness in its relations to the outer world; 2nd. The results of those affections through the action of Consciousness in combining, classifying, and transforming the materials furnished by Sense. Thus Experience, in its widest acceptation, is the product of two factors: Sensation and Laws of Consciousness.

So far all thinkers are agreed. The point of separation is this: Are the Laws of Consciousness evolved out of the relations of the Sensitive Organism and its environment; or are they pre-existent, and independent of any such relations? When the empirical school declares its acceptance of the former alternative, it seems to proclaim an absurdity—Experience, being a product of Sensations and Laws, is said to produce the Laws of

which it is the product. But this verbal contradiction is got rid of when we distinguish Experience from *Experiences*. Every particular modification of Consciousness is a particular experience. Each modification prepares the way for successors, and influences them. The Laws are evolved through these successive modifications, and Experience is the general term expressing the sum of these modifications.

But are the Laws evolved? The Sensational School has greatly obscured this question by the unscientific conception of the mind as a *tabula rasa* upon which Things inscribe their characters—a mirror passively reflecting the images of objects. This presupposes that Consciousness is absolved from the universal law of action and reaction, presupposes that the Organism has no movements of its own; and thus Psychology is separated from its only true biological ground. The *a priori* School commits the opposite mistake of conceiving Consciousness as a pure spontaneity, undetermined by the conditions of the Organism and its environment; a spontaneity which brings Laws, not evolved from relations, and organised as results, but derived from a supra-mundane, supra-vital source.

§ 60. We cannot take a step unless we admit that Consciousness is an active reagent, even in its first stage of evolution. Sensibility is not passive, cannot be conceived otherwise than as an excitation. Nor is this all. Biology teaches that the Sensitive Organism inherits certain aptitudes, as it inherits the structure, of its progenitors; so that the individual may be said to resume the Experience of the race. Faculties grow up in the development of the race. Forms of Thought, which are essential parts of the mechanism of Experience, are evolved,

just like the Forms of other vital processes. In fact, as Function is only the Form of activity of an Organ, it is obvious that, if the Organ is evolved, the Function is evolved, and with it the Laws of its action.

The *a priori* School denies this, not indeed explicitly, but with energetic implication. It does not boldly affirm that Function can exist without an organ; but it denies that Consciousness is a Function. Hence it has no difficulty in maintaining that the Mind of an infant is full-formed at birth, equipped with all its faculties, though without those materials of Thought which will afterwards be furnished in Experience. How can this be? The Aristotelian refuge of *potential existence* (§ 52) is ready for the escape of the metaphysician pursued by Fact. To us, who decline that refuge, the assertion that the Mind is full-formed at birth is as rational as the assertion that the infant is born a full-formed man, equipped with all his faculties of locomotion, speech, reproduction, etc. The infant may *become* a man, but *is* an infant, and his mind is undeveloped; if the spiritual experiences of the infant were suddenly arrested, does any one suppose that we should find in them those Fundamental Truths and Forms of Thought which Psychologists declare to be the native dowry of the mind? I do not know that any one frankly affirms this; but I know that the *a priori* School implies it, in maintaining that we have within us a source of knowledge which is not evolved in Experience.

§ 61. Kant is the most potent philosopher of this school, and, although in my criticism of the *Kritik* I have had to

consider his position, I cannot pass it by here without challenge; referring the reader therefore to what is said (vol. ii., p. 460 and pp. 475 sq., *History of Philosophy*, 3rd edition), I will here notice only such points as the argument needs.

Kant says: "There are two branches of knowledge: Sensibility and Understanding—which possibly spring from a common but unknown root. Through the one objects are *given*, through the other they are *thought*." Except for the reservation in the word "possibly," this is unimpeachable; but the reservation was dictated by his exaggerated view of the part played by the Subject in the construction of knowledge. He made an entity out of a relation. He thought the subjective element could be separated from the objective; and, thus separated, it would reveal itself as independent of and antecedent to Experience, constituting indeed the very conditions of Experience. I have shown this to be a fallacy. "The understanding," he says, "does not draw its laws (*a priori*) from Nature, but prescribes them to Nature—*schreibt sie dieser vor*."^a

§ 62. The error arises from a false point of view, which mistakes Anatomy for Morphology and Logic for Psychology. Accepting the human understanding in its developed forms, he presents us with these *constituent forms* as if they were *initial conditions*; the results which are developed through successive experiences are presented as the primary conditions of Experience: the generalisations are made antecedent to the particulars from which they are drawn. We are told that these Forms are implied in the particular

^a *Kritik*. Einleitung: sub finem.

^b Compare the striking passage in Mansel's *Metaphysics*, p. 45.

^c *Prolegomena zu jeder künftigen Metaphysik*, ii. § 36. Compare also his *Anthropologie*, i. § 9.

experiences. Granted: if they were not implied, they could not have been elicited. Logic is justified in disregarding the process of evolution, content with the result; for Logic has to exhibit the Forms of Thought, not their origin. In like manner, Anatomy has to do with the organs of the body, not with their genesis, which belongs to another branch of the science, Morphology. Now, the question of Experience is a question of origin; and Psychology reveals that Experience is the self-woven garment of Thought in which every thread is an experience. To assert that *à priori* principles or Forms of Thought render Experience possible is to assert either that these Forms exist before Thought itself exists, or else it is to confound the general with the particulars. Let us see this in an analogy.

§ 63. The vertebrate type is by some *à priori* thinkers held to be the necessary Form which renders the vertebrate animal possible. Anatomically, this is acceptable. But what says Morphology? Does it disclose the existence of a Type anterior to the existence of the animal? or does it not disclose the emergence of the typical Form in the successive phases of the animal's development? Obviously, the idea of pre-existences is a figment, a mere *ὑστερον πρότερον* (§ 50).

Again: a frog breathes by means of lungs. The lungs, once developed and brought into action, become a necessary condition of possible breathing. Ever afterwards the frog's existence is determined by this condition. But if we take the frog in its early stages, we find it breathing by means of gills, the lungs not having yet come into play. At this period it is not a lung-breathing animal; the necessary condition is somewhat different. In the course of development the forelegs begin to press upon the

arteries which supply the gills, and consequence of this pressure is the gradual disappearance of the gills. Meanwhile the lungs pass from their rudimentary inactive state into an active state, and the disappearing gills are replaced by the emerging lungs. It is thus a with the development of Mind: the necessary conditions which render experiences possible in the early stages are not the same in the later stages. Mind is a successive evolution from experiences, and its laws are the action of results. The Forms of Thought are developed just as the Forms of an Organism are developed. The infant Newton is no more the author of the *Principia* than the egg is the game-cock.

Indeed, this notion of *à priori* Forms, connate if not innate, is a violation of the ground-principle of Biology, and consequently, as all but metaphysicians must admit, of Psychology. If there is one lesson taught us everywhere in Biology, it is that nothing which is definitive is primitive—no form characteristic of the developed state is to be found in the germinal state. Therefore, unless we maintain that Mind is, *ab initio*, adult, as to its powers if not as to its Knowledge—that it does not develop, but only appears—we must admit that with Mind, as with Body, there is not preformation or pre-existence, but evolution and epigenesis.

§ 64. What is it prevents some men from accepting this alternative? It is that they discover in the adult mind principles which cannot, they affirm, be evolved from Experience. Necessity and universality point to an *à priori* source. Necessity is not given in any particular experience. Universality is not given in any number of experiences. Hence (here lies the fallacy!) they are not empirical.

We affirm that they belong to Experience, are products of Experience, and of Experience only; they are the results of that movement of Thought which passes from particulars to generals. I shall presently show that they are necessities of Thought under the limitations of Experience. Of course, it is requisite to avoid the common confusions on this subject, and not restrict Experience to Sense, as many unwarrantably restrict it. Thus Dr. Thomas Brown repeats the false statement commonly accepted as an axiom, that "Experience teaches us the past only, not the future." Is this so? Is it not the fact that, although experiences are only past modifications of Consciousness, they have a forward projection, and hence Experience teaches—whether correctly or falsely—the future irresistibly? Expectation is surely a product of experiences. Association is experience. When a dog, having once experienced the pain produced by a stick falling swiftly on his ribs, again sees me about to strike him, is there anything over and above his modified consciousness (Experience) which causes him to foresee pain to himself in that preliminary? The metaphysician wants an occult something to give this simple case the requisite obscurity. "It is not to experience alone," he says, "that we must have recourse for the origin of our belief that the future will resemble the past, but to some other principle which converts the simple facts of experience into a general expectation or confidence."¹ This is easily said, but Brown is forced to add: "This principle, since it cannot be derived from Experience itself, which relates only to the past, must be.....an

original principle of our nature." A very typical example of metaphysical logic! If the "original principle" mean something born with us, ready to receive our experiences as in a mould, I affirm this to be the *ὑστερον πρότερον* fallacy. If it mean no more than that our psychological nature is such as to group together phenomena experienced together, so that when once the stick has been coupled with pain the two ideas are associated, then indeed there is no objection to the phrase, except its mysteriousness.²

§ 65. Having thus defined and explained what is the sense in which Experience is legitimately held, we may address ourselves to the question of Necessary Truths, and see whether they point to a source of knowledge which is superior to, or at least independent of, Experience.

It may be convenient to use the term empirical, as opposed to *à priori*, to designate what is contingent, as opposed to what is necessary. But Kant himself saw that the distinction is only verbal, and in the opening section of the *Kritik* says: "We are wont to call many conclusions, which have their source in experience, *à priori*, simply because they are not drawn immediately from experience, but from a general rule, which was, nevertheless, drawn from experience. Thus we say of a man who undermined his house: He might have known *à priori* that the house would fall in—i.e., he need not have waited for the experience of its actual fall. Yet purely *à*

¹ Brown: *Lectures on the Philosophy of the Mind*, vi.

² "If we think in relations, and if relations have certain universal forms, it is manifest that such universal forms of relations will become universal forms of our consciousness. And if these further universal forms are thus explicable, it is superfluous, and therefore unphilosophical, to assign them an independent origin."—Spencer: *First Principles*, p. 229.

priori, this could not have been known, for, he must have learnt through experience that bodies are heavy, and fall when their supports are removed." Nevertheless, although Kant saw this, he still believed in the existence of *à priori* principles, which are demonstrably not less empirical. What misled him was, I think, the confusion between contingent Knowledge and contingent Truth. He declared Experience to be empirical and contingent, because our experiences could never be necessary and universal; whereas universal and necessary Truths were *à priori*, because they could not be given in particulars, and hence were *anterior* to all Experience. That they might be *posterior* to (*i.e.*, evolved from) Experience was an alternative he omitted to consider.

With these preliminary explanations, let us now examine how far the Necessary Truths are, or are not, capable of reduction to Experience.

§ 66. It appears to me that all writers on this subject have failed to see a distinction which is so obvious when pointed out that the neglect of it seems inexplicable: the distinction is between the (objective) fact and our (subjective) knowledge of the fact. We speak of sound, sometimes meaning the undulation of the air without us, and sometimes meaning the sensation excited within us by that undulation pulsating on our tympanum. By a similar laxity, we speak of a Truth sometimes as the relations of an external fact, and sometimes as the conception we have formed of the fact. Now, in the Truths classified as Contingent, the contingency is never applicable to the relations themselves, but solely to our conceptions of them. That 72 and 140 added together will make 212 is a truth which, objectively, has no contin-

gency whatever; but there is a subjective contingency in this as in all other unverified propositions: namely, the contingency of our miscalculating—misconceiving the objective relations. That "a body moving under certain conditions *as if* attracted by a force varying inversely as the square of the distance will describe an ellipse having the centre of attraction in one of the foci" is a proposition which, *once demonstrated*, has no contingency, although we may easily misconceive the relations it expresses; and that "the earth is a body acted on by such a force under such conditions" is likewise a proposition which is contingent until verified, and is necessary when verified. Assuming that there is an external world, its order must be necessary—*i.e.*, the relations must be what they are; the contingency can only lie in the correctness or incorrectness of our appreciation of those relations. Hence, instead of confusedly speaking of Necessary and Contingent Truths, it will be less ambiguous to speak of Verified and Unverified Propositions. All truths are true, but all propositions do not correctly express the external relations, and the question arises, which propositions are to be accepted as correctly expressing the relations? Obviously those only which have been verified by the equivalence of the internal and the external order, or the reduction to $A=A$.

Several persons seated at a table are startled by shrill sounds, which they one and all infer to be the shrieks of a child in pain or terror. The fact that they hear the sounds is indisputable, and the expression of this fact is a truth as "necessary" as that "two parallel lines cannot enclose space." Nor is there any contingency in the fact that these sounds are produced by pulsations of the air on their tympanum. Why is there none?

Simply because experience has found that the sensation of Sound is produced in this way—the objective relations have been verified. There is, however, some contingency in the proposition, "These sounds are caused by a child in terror or in pain"; not that there is the slightest contingency in the fact itself. On proceeding to the spot, the child is found to be struggling with an animal, and shrieking as it struggles. The truth of the proposition is now verified, and, unless scepticism be extended so far as to doubt whether all the phenomena are not the pageantry of a dream, we may affirm that the proposition is a necessary truth.

It may surprise the reader to see an example of this kind cited as a necessary truth, but I have selected it for the very purpose of my argument, which is to prove, that the question of contingency lies solely within the region of all unverified propositions. All verified propositions are necessary truths; all unverified propositions are contingent. This is a complete reversal of the position maintained by metaphysicians, for they affirm that necessary truths are precisely those propositions which cannot be verified (*i.e.*, exhibited in Experience), and that all propositions dependent on the verification of Experience are contingent.

§ 67. Let us now take another step. The advocates of Necessity, as an indication of a source of knowledge superior to Experience, are guilty of a confusion so misleading that I am surprised at neither friend nor foe having pointed it out. It is nothing less than *changing one of the terms of the proposition*, and then concluding as if the terms had remained unaltered. Thus the one argument incessantly brought forward is that some Truths are such as are seen to be not only true, but *necessarily* true; whereas,

there are other truths which, however true to-day, are contingent, because changes may occur to-morrow which will reverse them. It is further added that no amount of experience, no number of examples, can establish necessity, but only the fact of generality, and a life-long experience of uniformity cannot exclude the possibility of a sudden reversal. All that Experience can show is that a certain order has been uniformly observed; it cannot show that what has always been must always be.* Philosophers have accepted this reasoning as if it were irresistible; every one uses it without suspicion; but no sooner do we examine it closely than we find it rests on the unconscious substitution of one premiss for another. To say that "what has occurred will occur again, will occur always," is to say that "under precisely similar conditions precisely similar results will issue." A is A; and A is A for evermore. But to say that "what has occurred may probably not occur again, will not occur always," is to say that "under dissimilar conditions the results will not be similar." This proposition is as absolutely true as the former; but who does not see that it is a different proposition? When we declare that the laws of Nature are not necessary truths, but only contingent truths, because the mind readily conceives the possibility of their reversal, readily imagines such a change in the external conditions as would arrest the earth's motion, and with it all the manifold phenomena now resulting from that motion, what is it that we have declared? It is that, the relations

* "Tous les exemples qui confirment une vérité générale, de quelque nombre qu'ils soient, ne suffisent pas pour établir la nécessité universelle de cette même vérité: car il ne suit pas que ce qui est arrivé arrivera toujours de même."
—Leibnitz: *Nouveaux Essais*, préface.

of phenomena being altered, our conceptions, to be true, must alter with them. It is that, instead of the proposition, "*Such is the order of Nature, and such it will be so long as it is unaltered,*" we have silently substituted this proposition: "*Such is now the order of Nature, but if at any time it should be altered, it will be different.*" The only necessity is that a thing is what it is; the only contingency is that we may be mistaken as to *what* it is. The law of gravitation, or the elliptical orbits of the planets, may, or may not, be truths; but if they *are* truths, they are necessary truths. To say that they are "observed facts, nothing more," is all that is required by Necessity; and when we add that there is no proof of the continuance of the observed order, we either deny that "*A is A,*" or we silently change the proposition, and say "if A becomes B, it will no longer be A"; for, if the conditions continue unchanged, the order must necessarily continue unchanged; if the conditions alter, the order necessarily alters with them.

§ 68. The answer to this will probably be, That certain truths have such a character as to render their negation inconceivable, no alteration being conceivable in relations so absolute: and it is these truths that involve Necessity and *a priori* inspiration. This leads me to the only distinction between the truths of the two orders—namely, that in those classified as Necessary the relations are abstracted from all conditions, and considered simply in themselves; whereas in those classified as Contingent the relations are mixed with variable conditions; and it is in this variability that the contingency lies. When we say " $2 \times 2 = 4$," or "the internal angles of a triangle are equal to two right angles," we abstract the relations of Number and

Form from all other conditions whatever, and our propositions are true, whether the objects counted and measured be hot or cold, large or small, heavy or light, red or blue. Inasmuch as the truths express the abstract relations only, no change in the other conditions can affect these relations; and truths must always remain undisturbed *until* a change take place in their terms. Alter the number 2, or the figure triangle, by an infinitesimal degree, and the truth is thereby altered. When we say that bodies expand by heat, the proposition is a concrete one, including the variable conditions; but, although these variable conditions prevent our saying that "all bodies will, under all conditions, be always and for evermore expanded by heat," the case is not really distinguished from the former one, since both the Contingent and the Necessary Truth can only be altered by an alteration in the terms. If a body which does not expand by heat (there are such) be brought forward as impugning the truth of our proposition, we at once recognise that this body is under different conditions from those which our proposition included. This is the introduction of a new truth, not a falsification of the old. Our error, if we erred, was in too hastily assuming that all bodies were under the same conditions.

Hence the correct definition of a Contingent Truth is "one which *generalises the conditions*"; while that of a Necessary Truth is "one which is an *unconditional generalisation*." The first affirms that whatever is seen to be true, under present conditions, will be true so long as these conditions remain unaltered. The second affirms that whatever is true now, being a truth irrespective of conditions, cannot suffer any change from interfering conditions, and must therefore be universally true.

"The belief in the uniformity of nature is not a necessary truth, however constantly guaranteed by our actual experience. We are not compelled to believe that because A is ascertained to be the cause of B at a particular time, whatever may be meant by that relation, A must therefore inevitably be the cause of B on all future occasions."* This will command the assent of every one who fails to perceive the silent change in the terms of the proposition. Instead of saying "on all *like* occasions," which would give necessity to the proposition, Mr. Mansel renders it contingent by saying, "on all *future* occasions," and the contingency lies in this, that some of the future occasions may be *unlike*, in which cases a new proposition replaces the old. "That fire will ignite paper on all occasions when the two may be brought together" is what no one but a child or a savage with limited experience would assert; but that fire will always ignite paper on all future occasions which present conditions precisely similar to those that have once caused the ignition, is a truth having the character of necessity and universality which belongs to all identical propositions, and to those only.

§ 69. It will now be an easier task to criticise the arguments which profess to show that necessity and universality are irresistible marks of an origin superior to Experience. If what has already been said has found acceptance with the reader, he will recognise that every proposition being necessarily true, if it is true at all, the only question that can arise is, *Is* the proposition true? The only answer that can decide this is one which reduces it to an identical proposition; and as this reduction is the process

of Verification, and all Verification is through Experience, the conclusion inevitably reached is one directly counter to the *à priori* hypothesis.

Two positions require to be established. First, that we gain our conceptions of Mathematical, no less than Physical, relations through Experience. Secondly, that in those conceptions so gained are involved their characters of universality and necessity.

§ 70. The argument could not indeed be conducted if we allowed Experience to be restricted to Sensation only, as the metaphysicians unwarrantably restrict it. Dr. Whewell finds no difficulty in showing that propositions "obtained by mere observation of actual facts" cannot be necessarily true; for *no* proposition whatever can be thus obtained. His definition of Experience is, "the impressions of sense and our consciousness of our thoughts."¹ A far more accurate and philosophical thinker has defined its wider sense to be "co-extensive with the whole of consciousness, including all of which the mind is conscious as agent or patient, all that it does from within, as well as all that it suffers from without"; and he truly adds, "in this sense the laws of thought, as well as the phenomena of matter—in fact, all knowledge whatever, may be said to be derived from experience."² The reader, not familiar with Kant's or Mr. Mansel's speculations, may, perhaps, marvel that, after so comprehensive and just a definition of Experience, Mr. Mansel escapes the conclusion he has himself pointed out as irresistible, and falls back into the *à priori* argument, restricting Experience to "its narrower and more common meaning, as limited

* Whewell: *Hist. of Scientific Ideas*, 1858, i. 131.

* Mansel: *Prolegomena Logica*, 93.

* Mansel: *Metaphysics*, 267.

to the results of sensation and perception only." The explanation is that Mr. Mansel adopts the Kantian conception of Forms of Thought, as conditions of Experience, a conception I have attempted to refute. (Vol. ii., pp. 475 sq.) One passage is all that need be given:—

"That experience," says Mr. Mansel, "is the chronological antecedent of all our knowledge, even of the most necessary truths, is now generally admitted. But a distinction is frequently drawn between truths or notions of which experience is the *source* and those of which it is *only* the *occasion*..... Every general concept is in one sense empirical; for every concept must be formed from an intuition, and every intuition is experienced. But there are some intuitions which, from our constitution and position in the world, we cannot help experiencing, and there are others which, according to circumstances, we may experience or not. The former will give rise to concepts which, without any great impropriety of language, may be called *native* or *à priori*; being such as *though not coeval with the mind itself* [an important admission] will certainly be formed in every man as he grows up, and such as it was pre-ordained that every man should have. The latter will give rise to concepts which, for a like reason, may be called *adventitious* or *à posteriori*; being such as may or may not be formed according to the special experience of this or that individual."¹

Inasmuch as I throughout interpret Experience according to the wider definition given by Mr. Mansel, and only differ from him in regarding the Forms of Thought as evolved through Experience, both in the race and the indivi-

dual, whereas he (confounding, I think, Anatomy with Morphology) regards the Forms as conditions of experience, it will be needless to criticise his defence of Necessary Truths, having an *à priori* source, because the arguments I have urged against Kant are the arguments I should urge against Mr. Mansel.

§ 71. We may thus securely lay down the proposition that whatever can be learned must be learned by and through Experience; and we have then to examine whether we learn Necessary Truths, or bring them with us into the world as the heritage of a higher life.

That two parallel lines can never meet is a Necessary Truth. That is to say, it necessarily follows from the definition of a straight line. To call it, however, an *à priori* truth, a truth independent of Experience, is a very imperfect analysis of the mind's operations. An attempt is made to prove that the idea could never have been gained through Experience, because it commands universal assent, and because Experience itself could never give it necessity. Dr. Whewell's argument is that, let us follow two parallel lines out as far as we can, we are still unable to follow them to infinity; and, for all our experience can tell us to the contrary, these lines may possibly begin to approach immediately beyond the farthest point to which we have followed them, and so finally meet. Now, what ground have we for believing that this possibility is not the fact? In other words, how do we know the axiom to be absolutely true? Clearly *not* from Experience, says Dr. Whewell, following Kant.

We answer, Yes; clearly *from* Experience. For our experience of two parallel lines is precisely this: they do not enclose space. Dr. Whewell says that, for all our experience can tell us to

¹ *Op. cit.*, p. 170.

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the contrary, the lines may possibly begin to approach each other at some distant point; and he would correct this imperfect experience by *a priori* truth. The case is precisely the reverse. The tendency of the mind unquestionably is to fancy that the two lines *will* meet at some point; it is enlarged experience which corrects this tendency. There are many analogies in nature to suggest the meeting of the two lines. It is only our reflective experience which can furnish us with the proof which Dr. Whewell refers to ideas independent of all Experience. What proof have we that two parallel lines cannot enclose space? Why this: as soon as they *assume the property of enclosing space*, they *lose the property of parallelism*: they are no longer *straight* lines, but *bent* lines. In carrying out imaginatively the two parallel lines into infinity, we have a tendency to make them approach; we can only correct this by a recurrence to our experience of parallel lines; we must call up a distinct image of a parallel, and then we see that two such lines cannot enclose space.

The whole difficulty lies in the clearness or obscurity with which the mind makes present to itself past experience. "Refrain from rendering your terms into ideas," says Herbert Spencer, "and you may reach any conclusion whatever. 'The whole is equal to its part' is a proposition that may be quite comfortably entertained so long as neither wholes nor parts are imagined."^{*} But no sooner do we make present to our minds the meaning of parallel lines than in that very act we make present the impossibility of their meeting, and only as the idea of these lines becomes wavering does the idea of

their meeting become possible. A is no longer A, but B.

"Necessary truths," says Dr. Whewell, "are those in which we not only learn that the proposition *is* true, but see that it *must* be true; in which the negation is not only false, but impossible; in which we cannot, even by an effort of the imagination, or in a supposition, conceive the reverse of that which is asserted. That there are such truths cannot be doubted. We may take, for example, all relations of Number. Three and two make five. We cannot conceive it otherwise. We cannot, by any freak of thought, imagine three and two to make seven."

That Dr. Whewell cannot, by any freak of thought, *now* imagine three and two to make seven is very likely; but that he could *never* imagine this is untrue. If he had been asked the question before he had learned to reckon, he would have imagined seven quite as easily as five: that is to say, he would *not* have known the relation of three and two. Children have no intuitions of numbers: they learn them as they learn other things. "The apples and the marbles," says Herschel, "are put in requisition, and through the multitude of gingerbread-nuts their ideas acquire clearness, precision, and generality." But though, from its simplicity, the calculation of three added to two is with a grown man an instantaneous act, yet if you ask him suddenly how many are twice 365, he cannot answer till he has reckoned. He might certainly, by a very easy "freak of thought" (*i.e.*, by an erroneous calculation), imagine the sum-total to be 720; and although, when he repeats his calculation, he may discover the error, and declare 730 to be the sum-total, and say, "It is a Necessary Truth, that 365 added to 365 make 730," we

^{*} *Principles of Psychology*, p. 49.

should not in the least dispute the necessity of the truth, but presume that he had arrived at it through experience—namely, through his knowledge of the relations of numbers, a knowledge which he remembers to have laboriously acquired when a boy at school.

Dr. Whewell maintains that whereas Contingent Truths are seen to be true only by observation, and could not beforehand have been detected, Necessary Truths are “seen to be true by a pure act of thought.” But he overlooks the fact that even the simple truths of Number are not seen to be true *before* these relations have been exhibited; and if they are afterwards seen to be true by a pure act of thought, not less so are physical truths, once demonstrated, seen by a pure act of thought: neither can be seen beforehand. He declares that we cannot distinctly, although we may indistinctly, conceive the contrary of a Necessary Truth. Here again the oversight is the same. We cannot conceive the contrary of a truth *after* its necessity has been demonstrated, but we can distinctly conceive that $17 + 9 = 25$ *before* verification. So little does he apprehend the real case that, referring to the mistakes of children and savages, he winds up with the serene remark, “But I suppose no persons would, on such grounds, hold that these arithmetical truths are truths known only by experience.”

§ 72. Let us now turn to another argument. Kant says: “Experience, no doubt, teaches us that this or that object is constituted in such and such a manner, but not that it could not possibly exist otherwise.” “Empirical universality is only an arbitrary extension of the validity from that which may be predicted of a proposition valid in most cases

to that which is asserted of a proposition which holds good in all. When, on the contrary, strict universality characterises a judgment, it necessarily indicates another peculiar source of knowledge—namely, a faculty of cognition *a priori*. Necessity and strict universality, therefore, are infallible tests for distinguishing pure from empirical knowledge, and are inseparably connected with each other.”¹ And elsewhere: “If we thought to free ourselves from the labour of these investigations by saying, ‘Experience is constantly offering us examples of the relation of cause and effect in phenomena, and presents us with abundant opportunity of abstracting the conception of cause, and so at the same time of corroborating the objective validity of this conception’—we should in this case be overlooking the fact that the conception of cause cannot arise in this way at all; that, on the contrary, it must either have a basis in the Understanding or be rejected as a mere chimera. For this conception demands that something (A) should be of such a nature that something else (B) should follow from it necessarily, and according to an absolutely universal law. We may certainly collect from phenomena a law, according to which this or that *usually* happens; but the element of necessity is not to be found in it. Hence it is evident that to the synthesis of cause and effect belongs a dignity which is utterly wanting in any empirical synthesis.”²

§ 73. I answer that the very fact of our being compelled to judge of the unknown by the known—of our irresistibly anticipating the future to resemble the past—

¹ Kant: *Kritik: Einleitung*, § ii. (Micklejohn's translation, p. 3).

² *Op. cit.* *Transcendental Logik*, § 9 (Transl., p. 76).

of our incapacity to believe that similar effects will not always follow similar causes—this fact is a proof that we have no ideas except such as are acquired through Experience, and that uniformity in Experience irresistibly determines our conceptions of the future. For if we had *a priori* ideas, these ideas, being superior to Experience, would not always inevitably conform to it; they would bring another standard by which to judge—a standard which was not that of the already known. Have we such a standard?

§ 74. The school of *a priori* philosophers maintain that we have, and that the standard is the Necessity and Universality which certain truths involve, and which cannot be given in Experience. But we have had abundant evidence that every truth is necessarily true, and the fallacy is, that of first using a proposition in one sense, and then concluding from it in a different sense. It is not Truth which is contingent, but conditions which are variable, and every truth becomes invariable so long as the conditions do not vary. The same argument proves universality. If a truth simply express an unconditional generalisation—if it express an abstract relation, of course it is true for ever without possibility of change. In both cases we say A is A, and will be A for ever. When Kant says Experience cannot be universal, but only general, and cannot therefore bestow universality, because it cannot itself be universal, he forgets that Experience itself is no more general than it is universal—it is particular, and repeated. Now, just as a finite line may be produced to infinity although the mind is finite, just as zero may be added to zero, and space to space, without end, by the

simple process of repetition, so may a truth, "A is A," though particular in itself, be transformed into an universal.

I close here the discussion of one of the most important topics in the whole range of Metaphysics, and with it these Prolegomena.

When we enter on the scene of History, we see men nobly striving to grapple with the Unknowable. The shadow of the unknown world everywhere mingles with the light of day. It is the dark background on which Phenomena are visible. It is always present, and always limiting—as shadows limit—the objects of our thought. Beyond the Known stretches the vague Mystery, into which our eyes peer vainly, yet persistently. The border-land is ill-defined, and it is so because the sphere of the Known is always becoming larger and larger. We always hope that the Unknown is not also the Unknowable.

Hence Speculation is tempted to enter the realm of shadows, and will not admit the obvious fact that, on quitting *terra firma*, it abuts on vacancy, and peoples an airy void with airy nothings. Psychology has to check this groping amid shadows, by showing that the coast-line of the Knowable is sharply defined from the ocean of the Unknowable by the necessary limitation of human faculties. Between us and that ocean there stretches a vast and fertile region, where golden harvests have already been reaped, and where still richer harvests await the sickle—truths already gathered for the regulation of our Life, and wider truths which will hereafter be gathered for its renovation.

MODERN SCIENCE AND MODERN THOUGHT

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MODERN SCIENCE AND MODERN THOUGHT

BY

S. LAING

AUTHOR OF "PROBLEMS OF THE FUTURE," "A MODERN ZOROASTRIAN," "HUMAN ORIGINS," ETC.

WITH A BIOGRAPHICAL NOTE ON THE AUTHOR BY

EDWARD CLODD

(ISSUED FOR THE RATIONALIST PRESS ASSOCIATION, LTD.)

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INTRODUCTORY NOTE

THE career of the author of this book was long, varied, and distinguished. His father, Samuel Laing, after service in the Peninsular War, became, on the death of an elder brother, Malcolm Laing, who was author of a meritorious "History of Scotland," owner of the family estates in Orkney, where, for a time, he developed the kelp industry with success. He is remembered as the author of "Travels in Sweden and Norway," which may still be read with advantage for its trustworthy sketches of the general conditions of life in Scandinavia sixty years ago. But, from the standpoint of scholarship, he did more valuable work in translating the "Heimskringla," or chronicles of the kings of Norway, compiled in the twelfth century by an Icelandic poet-historian, Snorri Sturleson. The lyrical portions of this old saga were translated by the subject of this brief notice.

After some vicissitudes of fortune, the father settled in Edinburgh, where Samuel Laing was born on 17th December, 1811. That is the date given by his friend Mr. C. C. Macrae, in a privately-printed memoir issued in 1899, and may be accepted as against the date 12th December, 1812, which is given in the "Dictionary of National Biography."¹ His education was begun at Houghton-le-Spring Grammar School, whence he passed as a "pensioner" (the term means one who pays for his commons out of his own income) to St. John's College, Cambridge. He graduated as second wrangler and second Smith's prizeman, and in 1834 was elected a Fellow of his College. For three years he was a mathematical "coach," and in June, 1837, was called to the bar, where his acumen seized an opening as counsel in connection with the many railway schemes then agitating the community. The place and prominence which he thus secured led to his start in political life as secretary to Mr. Henry Labouchere (afterwards Lord Taunton) who was then (1839) President of the Board of Trade, and in the following year he was appointed Counsel to the newly created Railway Department of that Board. Insistence on the detail of the enormous volume of work which this involved is needless here, but an example of its onerous nature may be cited from Mr. Macrae. "In one session, 1845, the Board reported on 331 separate Bills for various railways, and on these no less than 240 separate reports were presented, each of which, supplying

¹ In the ninth edition of "Men of the Time" (1875) the date 1810 is given.

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exhaustive analyses and criticisms, was entirely drafted by Mr. Laing." His reputation as a great railway administrator was yet to be made, but his influence was manifest in many ways, notably in securing the daily running of the "Parliamentary" or penny a mile trains, and it is admitted that had his counsels been heeded, the results of the crisis which followed the wild railway speculation of that time would have been less disastrous.

In 1848, he accepted the Chairmanship and Managing Directorship of the London, Brighton, and South Coast Railway, a position which, in the first instance, he held till 1855. Three years before his retirement therefrom he entered Parliament as Liberal member for Wick, but in 1857 his farsighted and creditable opposition to the war against China cost him his seat. Two years afterwards he regained it, becoming in June, 1860, Financial Secretary to the Treasury, a position which was exchanged for the important post of Finance Minister of India, in succession to the eminent economist James Wilson, father-in-law of Walter Bagehot, a man never to be named without words of regret for the grievous loss to literature and economics which his early death involved. Wilson had been carried-off by dysentery in August, 1860, and Samuel Laing's reputation marked him as the fittest man to continue the task of reform rendered necessary by the financial disorganisation into which the Mutiny and other serious causes had thrown the revenue and expenditure of India. By prudent economies and readjustment of taxes, Laing converted a deficit into a surplus, but the laborious work so told upon his health that his return to England was compulsory. In 1865 he re-entered Parliament, and in 1867 resumed his old position as Chairman of the Brighton Railway, from which he retired only three years before his death, which occurred on the 6th August, 1897. He lost his seat in 1868, and four years passed before he was back at St. Stephen's; this time as representative of Orkney and Shetland, for which constituency he sat until his final retirement from political life in 1885.

It was then, when most men have warrant for margin of rest as fringe to an active career, that Samuel Laing began the writing of a series of volumes popularising the discoveries of modern science and the conclusions based on those discoveries. Of these, "Modern Science and Modern Thought" was the earliest, and remains the most acceptable. The veteran author wrote with no prentice hand. From time to time he had published pamphlets on political and social questions; his long training in the drafting of reports, and in the clear and compendious presentment of abstruse matters, was enviable qualification for the self-imposed task of his old age. Hence his skilful disentanglement of essentials from accidentals, and of the general from the particular, rendered his books as useful as they were opportune. Some twenty years before this he had done good and original work in science. Under the title of "Prehistoric Remains in Caithness," he published, in 1866, an account of stone implements, rude pottery, human and other bones found in "kists" in burial mounds, and in "middens" or shell-refuse heaps, in the neighbourhood of Keiss Castle. To this Professor Huxley.

INTRODUCTORY NOTE

added a supplement of fifty pages, describing and illustrating the human skulls, nine in all, and other portions of skeletons, some of which were grouped as Iberian or pre-Celtic. Mr. Laing expressed an opinion, warranted by the split bones discovered among miscellaneous witnesses of feasting, that "these aboriginal savages were occasionally cannibals."

His interest in science was, therefore, no new-born thing, and the prominence given to the human theme in all his books was the sequence (interrupted by the claims of important commercial undertakings on his time) of years of observation, of reading, and of reflection. The main part of the book now reprinted deals with man physically and psychically, and the titles of three out of its four successors—namely, "A Modern Zoroastrian" (1887), "Antiquity of Man" (1891), and "Human Origins" (1892)—evidence what a foremost place the large question of man's evolution and destiny filled in his mind.

The first part of "Modern Science and Modern Thought" is now subjected only to such revision as is required by the advance of knowledge during the last seventeen years. The portions thus affected are those dealing with the continuity of Palaeolithic and Neolithic man in Continental Europe; with the recent discovery of remains, probably of an intermediate form between man and ape, in Java; and with the remarkable discoveries in Babylonia, which appear to accord to that empire an earlier civilisation than that of Egypt. But the general conclusions, as stated by the venerable author, are strengthened by the newer evidence. In the second part, only a few verbal corrections have been made, since the arguments which are therein advanced against the theory of the supernatural origin of the several documents making-up the New Testament, and, consequently, against the claims as to revelation advanced on its behalf, need neither addition or revision. And for the rest, we have the author's confession of faith, and sage remarks on motives to right conduct, making appeal to minds of the most opposite beliefs in a spirit which must ensure sympathy, if it does not win assent.

The writer of this note had not the advantage of Samuel Laing's personal acquaintance, and it is, therefore, permissible to draw upon Mr. Macrae's memoir for some presentment of the man.

"He had the healthy body as well as the healthy mind; from youth till advanced age he delighted in all field sports. He was fond of good art and music; his tastes in both were classical and old-fashioned. Beethoven and the Italian operatic composers were his favourites; 'but he could not tolerate the formlessness of the modern school led by Wagner.' His conversation had distinction; he detested gossip and idle talk. He had a retentive memory, and 'his accuracy, even to historical details, was astonishing.' His favourite authors were Scott and Tennyson; in latter life, however, his reading was mainly restricted to scientific books. His charities, always unostentatious, 'were, in proportion to his means, liberal,' and their variety manifested his toleration. Open-minded, he harboured

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never a prejudice : nor was his equanimity ever ruffled, 'so that the idea of a Stoic sage had become with him a habit of daily life and conduct.' . . . 'He believed in the people—in the masses—in their broad common-sense and honest judgment on large questions which they understood, and it was mainly to their instruction that he looked in the books that he wrote. His ideals were a plain, simple manner of life, manly conduct and honest work. His own long life was throughout an example of these things, and as he had lived, so he continued to the end.'"

EDWARD CLODD.

June 21st, 1902

AUTHOR'S PREFACE

THE object of this book is to give a clear and concise view of the principal results of Modern Science, and of the revolution which they have effected in Modern Thought. I do not pretend to discover fresh facts or to propound new theories, but simply to discharge the humbler though still useful task of presenting what has become the common property of thinking minds, in a popular shape, which may interest those who lack time and opportunity for studying special subjects in more complete and technical treatises.

I have endeavoured also to give unity to the subjects treated of, by connecting them with leading ideas: in the case of Science, that of the gradual progress from human standards to those of almost infinite space and duration, and the prevalence of law throughout the universe to the exclusion of supernatural interference; in the case of Thought, the bearings of these discoveries on old creeds and philosophies, and on the practical conduct of life. The endeavour to show how much of religion can be saved from the shipwreck of theology has been the main object of the second part. Those who are acquainted with the scientific literature of the day will at once see how much I have been indebted to Darwin, Lyell, Lubbock, Huxley, Proctor, and other well-known writers. In fact, the first part of this book does not pretend to be more than a compendious popular abridgment of their works. I prefer, therefore, acknowledging my obligations to them once for all, rather than encumbering each page by detailed references.

The second part contains more of my own reflections on the important subjects discussed, and must stand or fall on its own merits rather than on authority. I can only say that I have endeavoured to treat these subjects in a reverential spirit, and that the conclusions arrived at are the result of a conscientious and dispassionate endeavour to arrive at "the truth, the whole truth, and nothing but the truth."

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MODERN SCIENCE AND MODERN THOUGHT

PART I.—MODERN SCIENCE

CHAPTER I

SPACE

Primitive Ideas—Natural Standards—Dimensions of the Earth—Of Sun and Solar System—Distance of Fixed Stars—Their Order and Size—Nebulae and other Universes—The Telescope and the Infinitely Great—The Microscope and the Infinitely Small—Uniformity of Law—Law of Gravity—Acts through all Space—Double Stars, Comets, and Meteors—Has acted through all Time.

THE first ideas of space were naturally taken from the standard of man's own impressions. The inch, the foot, the cubit, the fathom, were the lengths of portions of his own body, obviously adapted for measuring objects with which he came in direct contact. The mile was the distance traversed in 1,000 double paces; the league the distance walked in an hour. The visible horizon suggested the idea that the earth was a flat, circular surface like a round table; and as experience showed that it extended beyond the limits of a single horizon, the conception was enlarged and the size of the table increased so as to take in all the countries known to the geography of successive periods.

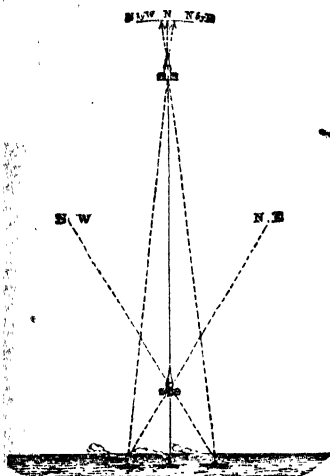
In like manner the sun, moon, and stars were taken to be at the distance at which they appeared; that is, first of the visible horizon, and then of the larger circle to which it had been found necessary to expand it. It was never doubted that they really revolved, as they seemed to do, round this flat earth circle, dipping under it in the west at night, and re-appearing in the east with the day. The

conception of the universe, therefore, was of a flat, circular earth, surrounded by an ocean stream, in the centre of a crystal sphere which revolved in twenty-four hours round the earth, and in which the heavenly bodies were fixed as lights for man's use to distinguish days and seasons. The *maximum* idea of space was therefore determined by the size of the earth circle which was necessary to take in all the regions known at the time, with a little margin beyond for the ocean stream, and the space between it and the crystal vault, required to enable the latter to revolve freely. In the time of Homer and the early Greek philosophers, this would probably require a maximum of space of from 5,000 to 10,000 miles. This dimension has been expanded by modern science into one of as many millions, or rather hundreds of millions, as there were formerly single miles, and there is no sign that the limit has been reached.

How has this wonderful result been attained, and how do we feel certain that it is true? Those who wish thoroughly to understand it must study standard works on Astronomy, but it may be possible to give some clear idea of the processes by which it has been arrived at, and of the cogency of the reasoning by which we are compelled to accept facts so contrary to the first impressions of our natural senses.

The fundamental principle upon which all measurements of space, which are beyond the actual application of human standards, depend, is this: that distant objects change their bearings for a given change of base, more or less in proportion as they are less or more distant.

Suppose I am on board a steamer sailing down the Thames, and I see two churches on the Essex coast directly opposite to



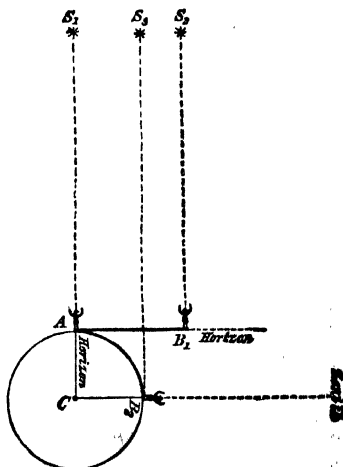
me, or bearing due north, the first of which is one mile, and the other ten miles distant. I sail one mile due east and again take the bearings. It is evident that the first church will now bear north-west, or have apparently moved through 45° , i.e., one-eighth part of the circumference of a complete circle, assuming this circumference to be divided into 360 equal parts or degrees; while the more distant church will only have altered its bearing by a much less amount, easily determined by calculation, but which may be taken roughly at 5° instead of 45° .

The branch of mathematics known as Trigonometry enables us in all cases, without exception, where we know the apparent displacement or change of bearing of a distant object produced by taking it from the opposite ends of a known base, to calculate the distance of that object with as much ease and certainty as if we were working a simple sum of rule of three. The first step is to know our base, and for this purpose it is essential to know the size and form of the earth on which we live. These are determined by very simple considerations.

If I walk a mile in a straight line, an object at a vast distance like a star will

not change its apparent place perceptibly. But if I walk the same distance in a round circle, what was originally on my left hand will now be on my right, or will have changed its apparent place by 180° . If I walk my mile on the circumference of a circle of twice the size, I shall have traversed a quadrant or one-fourth part of it, and changed the bearing of the distant object exactly half as much, or 90° , and so on, according to the size of the circle, which may therefore be readily calculated from the length that must be travelled along it to shift the bearing of the remote object by a given amount, say of 1° .

If, for instance, by travelling 65 miles from north to south we lower the apparent height of the Pole star 1° , it is mathematically certain that we have travelled this 65 miles, not along a flat surface, but along a circle which is 360 times 65, or, in round numbers, 24,000 miles in circumference and 8,000 miles in diameter. And if, whenever we travel the same distance on a meridian or line drawn on the circumference from north to south, we find the same displacement of 1° , we may be sure that our journey has been in a true circle, and that the



form of the earth is a perfect sphere of these dimensions.

...is very nearly what actually is, when we apply methods of scientific accuracy to measure the earth. The true form of the earth is not exactly spherical, but slightly oval or flatter at the poles, being almost precisely the form it would have assumed if it had been a fluid mass rotating about a north and south axis. But it is very nearly spherical, the true polar diameter being 7,899 miles, and the true equatorial diameter 7,926 miles, so that for practical purposes we may say roughly that the earth is a spherical body, 24,000 miles round and 8,000 miles across.

This gives us a fresh standard from which to start in measuring greater distances. Precisely as we inferred the distance of the church from the steamer in our first illustration, we can infer the distance of the sun from its displacement caused by observing it from two opposite ends of a base of known length on the earth's surface. This is the essential principle of all the calculations, though when great accuracy is sought for, very refined methods of applying the principle are required, turning mainly on the extent to which the apparent occurrence of the same event—such as the transit of Venus over the sun's disc—is altered by observing it from different points at known distances from one another on the earth's surface. The result is to show that the sun's distance from the earth is, in round numbers, 93,000,000 miles. This is not an exact statement, for the earth's orbit is not an exact circle, but the sun and earth really revolve in ellipses about the common centre of gravity. The sun, however, is so much larger than the earth that this centre of gravity falls within the sun's surface, and, practically, the earth describes an ellipse about the sun, the 93,000,000 miles being the mean distance, and the eccentricity or deviation from the exact circular orbit, being about one-sixtieth part of that mean distance. This distance, again, gives us the size of the sun, for it is easily calculated how large the sun must be to look as large as it does at a distance of 93,000,000 miles. The result is, that it is a sphere of about 865,000 miles in diameter. Its bulk, therefore, exceeds that of the earth in the proportion of 1,300,000 to 1. Its density, or the quantity of matter in it, may be calculated from the effect of its action on the earth under the law of gravity at the

distance of 93,000,000 miles. It weighs as much as 332,000 earths.

The same method gives us the distance, size, and weight of the moon and planets, and it gives us a fresh standard or base from which to measure still greater distances. The distance of the earth from the sun being 93,000,000 miles, and its orbit an ellipse nearly circular, it follows that it is in mid-winter, in round numbers, 186,000,000 miles distant from the spot where it was at midsummer. What difference in the bearings of the fixed stars is caused by traversing this enormous base?

The answer is, in the immense majority of cases, no difference at all; i.e., their distance is so vastly greater than 186,000,000 miles that a change of base to this extent makes no change perceptible to the most refined instruments in their bearings as seen from the earth. But the perfection of modern instruments is such, that a change of even one second, or $\frac{1}{3600}$ th part of one degree, in the annual parallax, as it is called, of any fixed star, would certainly be detected.

This corresponds to a distance of 206,265 times the length of the base of 186,000,000 miles, or of 20,000,000,000,000 miles, a distance which it would take light, moving at the rate of 186,000 miles per second, three years and eighty-three days to traverse. There is only one star in the whole heavens, a bright star called Alpha, in the constellation of the Centaur, which is known to be as near as this. Its annual parallax is 0.976", or very nearly 1", and therefore its distance very nearly 20 millions of millions of miles. All the other stars, of which many millions are visible through powerful telescopes, are further off than this.

There are about eight other stars which have been estimated by astronomers to give indications of an annual parallax of less than half a second, and therefore whose distances may be somewhere from twice to ten times as great as that of Alpha Centauri. From the quantity of light sent to us from these distances, some approximation has been made to their intrinsic splendour as compared with our sun. That of Alpha Centauri is computed to be nearly $2\frac{1}{2}$ times; that of Sirius, the brightest star in the heavens, 393 times; greater than that of the sun. These figures may or may not represent greater size or greater intensity.

light, and they are quoted only to give some idea of the vastness of the scale of the universe of which our solar system is but a minute part.

For does even this nearly fathom the depth of the abysses of space. Telescopes enable us to see a vast multitude of stars of varying size and brilliancy. It is computed by astronomers that there are at least one hundred millions of stars within the range of the telescopes used by Herschel for gauging the depth of space, and a thousand millions within the range of the great reflecting telescope of Lord Rosse. As many as eighteen different orders of magnitude have been counted, and the more the power of telescopes is increased the more stars are seen. Now, as there is no reason to suppose that this extreme variety of brilliancy arises from extreme difference of size of one star from another, it must be principally owing to difference of distance, so that a star of the eighteenth magnitude is presumably many times further off than any of the first magnitude, the distance of the nearest of which has been proved to be something certainly not less than 10,000,000,000,000 miles. In fact, these stellar distances are so great that in order to bring them at all within the range of human imagination we are obliged to apply another standard, that of the velocity of light. Light can be shown to travel at the rate of about 178 millions of miles in 16 minutes, for this is the difference of the time at which we see the same periodical occurrence, as for instance the eclipses of Jupiter's satellites, according as the earth happens to be at the point of its orbit nearest to Jupiter, or at that farthest away. The velocity of light is therefore about 166,000 miles per second, a velocity which has been fully confirmed by direct experiments made on the earth's surface.

These enormous distances are reckoned, therefore, by the number of years which it would take light to come from them, travelling as it does at the rate of 166,000 miles a second. The nearest fixed star, Alpha Centauri, is seen by a ray which left it three years and eighty-three days ago, and has been travelling ever since at the rate of 166,000 miles per second. Sirius, the brightest of the fixed stars, if the determination of its annual parallax is correct, is six times further off, and is seen, not as it exists to-day,

but as it existed nearly three years ago; and the light we now see is that of the stars of the eighteenth magnitude, which can hardly have left them less than ten years ago.

Even this, however, is far from exhausting our conception of the magnitude of space. Beyond the stars which are near enough to be seen separately, powerful telescopes show a galaxy in which the united lustre of myriads of stars is only perceptible as a faint nebulous gleam. And in addition to stars the telescope shows us a number of nebulae, or faint patches of light, sometimes globular, sometimes in wreaths, spiral wisps, and other fantastic shapes, scattered about the heavens. Some of these are resolved by powerful telescopes into clusters of stars inconceivably numerous and remote, which appear to be separate universes, like that of which our sun and fixed stars form one. Others again cannot be so resolved, and are shown by the spectroscope to be enormous masses of glowing gas, or cosmic matter, out of which other universes are in process of formation.

We are thus led, step by step, to enlarge our ideas of space from the primitive conception of miles and leagues, until the imagination fails to grasp the infinite vastness of the scale upon which the material universe is really constructed.

If the telescope takes us thus far beyond the standards of unaided sense in the direction of the infinitely great, the microscope, aided by calculations as to the nature of light, heat, electricity, and chemical action, takes us as far in the opposite direction of the infinitely small. The microscope enables us actually to see magnitudes of the order of $\frac{1}{100,000}$ of an inch as clearly as the naked eye can see those of $\frac{1}{16}$ th. This introduces us into a new world, where we can see a whole universe of things both dead and alive of whose existence our forefathers had no suspicion. A glass of water is seen to swarm with life, and be the abode of bacteria, amoeba, rotifers, and other minute creatures, which dart about, feed, digest, and propagate their species in this small world of their own, very much as jelly-fish and other humble organisms do in the larger seas. The air also is shown to be full of innumerable germs and spores floating in it, and ready to be deposited and spring into life.

...they find a seed-bed fitted to them. Given a favourable soil in the human frame, and the invisible seeds of scarlet fever, cholera, and small-pox ripen into full crops, just as the germs of a fungus invade the potato crops of a whole district, and lead to Irish famines and the extermination of more than a million of human beings.

The microscope also enables us to see the very beginnings of life and watch its primitive element, protoplasm, in the form of a minute speck of jelly like matter, through which pulsations are constantly passing, and we can watch the transformations by which an elementary cell of this substance splits up, multiplies, and by a continued process of development builds up with these cells all the diversified forms of vegetable and animal life.

But far as the microscope carries us down to dimensions vastly smaller than those of which the ordinary senses can take cognizance, the modern sciences of light, heat, and chemistry carry us as much farther downwards, as the telescope carries us upwards beyond the boundaries of our solar system into the expanses of stars and nebulae. We are transported into a world of atoms, molecules, and light-waves, where the standard of measurement is no longer in feet or inches, or even in one-hundred-thousandth part of an inch, but in millionths of millimetres, *i.e.*, in $\frac{1}{1000000000}$ of an inch. The dimensions are such that, as we shall see when we come to deal with matter, if the drop of water in which the microscope shows us living animalcula were magnified to the size of the earth, the atoms of which it is composed would appear of a size intermediate between that of a rifle-bullet and a cricket-ball.

This, then, is Nature's scale of space, from millionths of a millimetre up to millions of millions of miles. Throughout the whole of this enormous range of space the laws of Nature prevail.

Matter attracts matter by the same law of gravity in the case of double stars revolving about each other at a distance at which a base of 186,000,000 miles has long since become a vanishing point, and in the case of atoms which form the substance of a gas, as in that of an apple falling from a tree at the earth's surface. Comets, darting off into the remote regions of space, return after long

periods, in obedience to the same law. Clouds of meteoric dust revolve in fixed orbits, determined by the law of gravity, as surely as the moon revolves round the earth, and the earth round the sun.

This is a conclusion of such fundamental importance that it is desirable to give the uninitiated reader some clear idea of what it means, and how it is arrived at. Newton's great discovery, the law of gravity, is this—that all matter acting in the mass attracts other matter directly as the amount of attracting matter, and inversely as the square of the distance. That is, 2 or 2,000,000 tons attract with twice the force of 1 or 1,000,000 tons at the same distance, but with only one-fourth of the same force at double, and one-ninth at triple the distance.

How is this law proved? This will be best answered by explaining how it was discovered. The force of gravity, or attraction of the earth on bodies at the earth's surface, is a known quantity. The whole matter in a spherical body attracts exactly as if it were all collected at the centre. The force of gravity at the earth's surface is, therefore, that of the earth's mass exerted at a distance of about 4,000 miles, and this can be easily measured by observing the space fallen through, and the velocity acquired by a falling body in a given time, such as 1".

Does the same force act at the distance of the moon, or 238,850 miles? This was the question Newton asked himself, and the answer was got at in the following way. If we swing a stone in a sling round our head, it describes a circle as long as we keep the string tight, and its pull upwards just balances the pull of the stone to fly outwards, *i.e.*, to use scientific language, as long as the centripetal just balances the centrifugal force. But if we let go the string the stone darts off in the direction in which, and with the velocity with which, it was moving when the centripetal force ceased to act.

The moon is such a sling-stone revolving about the earth. At each instant it is moving in the direction of a tangent to its orbit, and would move on in a straight line along this tangent if it were not deflected from it by some other force. That is, if the moon were now at M_1 , it would, after a given interval of time, be at M_2 , if no force had acted on it.

point of fact it is not at M_1 , but at M_2 . Therefore it has been pulled down from M_1 to M_2 , or, if you like, fallen through the space $M_1 M_2$ in the time in which it would have travelled over $M_1 M_2$ with its velocity at M_1 . How does this space correspond with the space through which a heavy body would have fallen in the same time at the earth's surface? It corresponds exactly, assuming the law of gravity to be that it decreases with the square of the distance.

This may be taken as the first approximation, but the more accurate and universal proofs of the law are derived from mathematical calculations of what the nature of the attractions must be, in the case of the sun, earth, moon, and planets, to make them describe such elliptic orbits and observe such laws, as from Kepler's observations we know actually to be the case. The answer here again is the law of gravity, and no other possible law, and this is confirmed in practice by the fact that we are able, by calculations based on it, to satisfy the requisite of safe prophecy—that of knowing beforehand, and to predict eclipses, comets, transits, and occultations, and generally to compile Nautical Almanacs, by which ships know their whereabouts in pathless oceans.

This, then, affords us a first firm standing-point in any speculations as to the nature of the universe. One great law, at any rate, is universal throughout all space, and, as we shall see later, suns, stars, and nebulae are composed of the same matter as the earth and its inhabitants.

In like manner comets and meteors, though presenting in other respects phenomena not yet fully understood, are proved to obey the same laws and to consist of the same matter. Comets are bodies which revolve round the sun, and are attracted by it and by the planets, in obedience to the ordinary law of gravity, though their density is so slight, that although often of enormous volume, they produce no perceptible effect on the planets, even when engaged amidst the satellites of a planet,

as Lexell's comet was amongst those of Jupiter.

Their dimensions may be judged of when it is stated that the comet of 1811 had a tail 120 millions of miles in length, and 15 millions of miles in diameter at the widest part, while the diameter of the nucleus was about 127,000 miles, or more than 15 times that of the earth. In order that bodies of this magnitude, passing near the earth, should not affect its motion or change the length of the year by even a single second, their actual substance must be inconceivably rare. If the tail, for instance, of the comet of 1843 had consisted of the lightest substance known to us, hydrogen gas, its mass would have exceeded that of the sun, and every planet would have been dragged from its orbit. As Proctor says: "A jar-full of air would probably have outweighed hundreds of cubic miles of that vast appendage which blazed across the skies to the terror of the ignorant and superstitious."

The extreme tenuity of a comet's mass is also proved by the phenomenon of the tail, which, as the comet approaches the sun, is thrown out sometimes to a length of 90 millions of miles in a few hours. And what is remarkable, this tail is thrown out against the force of gravity by some repulsive force, probably electrical, so that it always points away from the sun. Thus a comet which approaches the sun with a tail behind it, will, after passing its perihelion, recede from the sun with its tail before it, and this although the tail may be of the length of 200 millions of miles, as in the comet of 1843. In the course of a few hours, therefore, this enormous tail has been absorbed and a new one started out in an opposite direction. And yet, thin as the matter of comets must be, it obeys the common law of gravity, and whether the comet revolves in an orbit within that of the outer planets, or shoots off into the abysses of space and returns only after hundreds of years, its path is, at each instant, regulated by the same force as that which causes an apple to fall to the ground; and its matter, however attenuated, is ordinary matter, and does not consist of any unknown elements. The spectroscope shows that comets shine partly by reflected sunlight and partly by light of their own, the latter part being gaseous, and this gas, in most

comet, contains carbon and hydrogen, possibly also oxygen, in the form of hydrocarbons or marsh gas, cyanogen and possibly oxygen compounds of carbon. One comet has recently given the line of sodium, and the presence of iron is strongly suspected.

As regards meteors, which include shooting stars and aërolites, it has been long known, from actual masses which have fallen on the earth, that they are composed of terrestrial matter, principally of iron, which has been partially fused by the heat engendered by the friction of the rapid passage through the air. The recurrence of brilliant displays at regular intervals, as for instance those of August and November, when the whole sky often seems alive with shooting stars, had also been noticed; but it was reserved for recent times to prove that these meteor streams are really composed of small planetary bodies revolving round the sun in fixed orbits by the force of gravity, and that their display, as seen by us, arises from the earth in its revolution round the sun happening to intersect some of these meteoric orbits, and the friction of our atmosphere setting fire to and consuming the smaller meteors which appear as shooting stars. This shows the enormous number of meteors by which space must be tenanted. It is proved that the earth encounters more than a hundred meteor systems, but the chance of any one ring or system being intersected by the earth is extremely small, as the earth is such a minute speck in the whole sun-surrounding space of the solar system. On a scale on which the earth's orbit was represented by a circle of 10 feet diameter, the earth itself would be only about $\frac{1}{160}$ th of an inch in diameter, so that if, as astronomers say, the earth encounters about a hundred meteor systems in the course of its annual revolution, space must swarm with an innumerable number of these minute bodies all revolving round the sun by the force of gravity.

Has this law of gravity been uniform through all time as it undoubtedly is through all space? We have every reason to believe so. The law of gravity, which is the foundation of most of what we call the natural laws of geological action, has certainly prevailed, as will be shown later, through tremendous periods of geological time, and far beyond this we can discern it operating in those astronomical changes by which cosmic matter has been condensed into nebulae, nebulae into suns throwing off planets, and planets throwing off satellites, as they cooled and contracted. Double stars at a distance exceeding 20 millions of millions of miles revolve round their common centre of gravity by this law. Atoms and molecules almost infinitely smaller than millionths of millimetres derive from it their specific weights with as much certainty as if they were pounds or hundredweights.

We cannot speak with quite the same certainty of infinite time as we can of infinite space, for we have no telescopes to gauge the abysses of time, and no certain standards, like those of the known dimensions of our solar system, to apply to periods too vast for the imagination.

But we can say this with certainty, that the present law of gravity must have prevailed when the outermost planet of our system, Neptune, was condensed into a separate body and began revolving in its present orbit, and that it has continued to act ever since; while, as a matter of probability, it is as nearly certain as anything can be, that the law by which the apple falls to the ground is an original condition of matter.

What space and matter really may be, we do not know, and if we attempt to reason about the limits of the one and the origin of the other, if origin it had, we get into the misty realms of metaphysics, where, like Milton's fallen angels, we

Find no end in wandering mazes lost.

CHAPTER II

TIME

Evidence of Geology—Stratification—Denudation—Strata identified by Superposition—By Fossils—Geological Record shown by Upturned Strata—General Result—Palaeozoic and Primary Periods—Secondary—Tertiary—Time required—Coal Formation—Chalk—Elevations and Depressions of Land—Internal Heat of Earth—Earthquakes and Volcanoes—Changes of Fauna and Flora—Astronomical Time—Tides and the Moon—Sun's Radiation—Earth's Cooling—Geology and Astronomy—Bearings on Modern Thought.

GEOLOGY has done for time what astronomy has for space—it has expanded the limited ideas derived from natural expression and early tradition into those of an almost infinite duration. This result is so important that it is desirable that all educated persons, without being professed geologists, should have some clear idea of the nature of the conclusions and of the evidences on which they rest.

This I will endeavour to give.

When we come to examine the structure of the earth—or rather of the outer crust of the earth which we inhabit—with the care and precision of scientific methods, we find that it is not of uniform composition, but consists mainly of distinct layers, or strata, lying one over the other. This is true not only of the larger beds, or distinct formations, but of the details of each formation, many of which are built up as regularly as the layers of the Great Pyramid, while others are made up of layers no thicker than the leaves of a book.

Now consider what this fact of stratification implies. In the first place it implies deposit from water, for there is no other agency by which materials can be sorted out and thrown down in horizontal layers, while this agency is now doing the same thing every day and all over the world. The Rhone flows into the Lake of Geneva a turbid stream, and flows out of it as clear as crystal. All the matter it brings in is deposited at the bottom of the lake, and in course of time will fill it up. This deposit varies with every alternation of flood and drought; the river depositing sometimes

boulders and coarse gravel, sometimes shingle, sand, or fine mud, and carrying this material sometimes to a greater and sometimes to a less distance, according to the velocity of the stream.

Ages hence, when the lake has been converted into dry land, it will be as certain, whenever a pit is dug or a well sunk in it, that it was the work of a river flowing into a lake, as it is to-day, when we can see them at work.

And what is true of the Rhone and the Lake of Geneva, is true on a larger scale of the Ganges, the Mississippi, and of every sea or ocean, with every river or torrent pouring into it.

Again, the sea is perpetually wearing away the coasts of all lands, and where the cliffs are soft and the tides and currents strong, at a very rapid rate. The materials swallowed-up are rolled as shingle, ground into sand, or floated as fine mud, and all finally assorted and laid down at the bottom of the sea, not in a confused heap, but in regular succession. On some of them generations of shell-fish and other marine creatures live and die, and their remains are covered over by fresh sands or clays, and preserved for future geologists. All this is going on now, and when we examine the rocks we find that precisely the same sort of thing has been going on from the newest to the oldest strata. With the exception of a comparatively small amount of igneous rock, which has boiled-up from deep sources of molten matter, and been poured-out in sheets of lava, or masses of trap, porphyry, and granite, according to the amount of pressure it has undergone and the time it has taken to cool and crystallise, all the earth's surface may be said to consist of stratified matter, showing clear signs of having been deposited from water. Some of the oldest rocks, such as gneiss, may be a little doubtful, as they have clearly been subjected to great heat under great pressure, until they became plastic enough to crystallise as they cooled, and thus destroy any fossils embedded in them and obliterate most of the ordinary signs of stratification. But the opinion of the best geologists is that they were originally stratified, and have become what is called "metamorphic," or changed by heat and pressure into the semblance of igneous rocks. But even if these are not included, enough remains to justify the

assertion that the outer crust of the earth, as known to us, is made up of stratified materials which have been deposited from water.

Now this implies another most important fact, viz., that there must have been waste or denudation of existing land corresponding to the deposit of stratified materials under water. Water cannot generate these materials, and every square mile of such strata, say 10 feet thick, implies the removal of 10 feet from a square mile of land surface by rains and rivers, or of an equivalent amount of cubical content in some other way, as by the erosion of a coast line. This is a very important consideration when we come to estimate the time required for the formation of such a thickness of stratified beds as we find existing. There must have been a fundamental crystalline rock as the earth cooled down from a fluid state and acquired a solid crust, and this rock must have been worn down by primeval seas and rivers as the progressive cooling admitted of the condensation of aqueous vapour into water. The waste of this primitive crust must have been deposited in strata at the bottom of those seas in thick masses, covering the original rock, and these again must have been partly crystallised by heat and pressure, and over and over again upheaved and submerged, and themselves worn down by fresh erosion, forming fresh deposits which underwent a repetition of the same process.

A third important inference from the fact of stratification is that all strata must have been originally deposited horizontally, or very nearly so, and in such order that the lowest is the oldest.

Suppose we fill a jar with water, and put some white sand into it, and when that has subsided to the bottom and the water is clear, some yellow sand, and again some red sand, it is clear that we shall have at the bottom of the jar three horizontal deposits or strata, one white, one yellow, and one red, and that by no conceivable means can the order in which they were deposited have been other than first white, secondly yellow, and lastly red. This law, therefore, is invariable, that wherever it is possible to trace a series of strata lying one above the other, the lowest is the oldest, and the highest the youngest in point of time.

It, therefore, all the great formations,

from the old Laurentian up to the Tertiary, had been deposited uniformly all over the world, and had remained undisturbed, and we could have seen them in one vertical section in a column twenty-five miles high—for that is about their total known thickness—we should have been able without further difficulty to determine their order of succession and respective magnitudes.

But this is plainly impossible, for the deposits going on at any one time are of very different character. For instance, we have at present the Globigerina cone gradually filling the depths of the Atlantic with a deposit resembling chalk; the Gulfs of Bengal and Mexico silting up with fine clay from river deposits; vast tracts in the Pacific, Indian Ocean, and Red Sea, covered with coral and the debris of coral-reefs. How could these be upheaved into dry land and explored by future geologists, be identified as having been formed contemporaneously?

Suppose that coins of Victoria had been dropped in each of them, the geologist who discovered these coins would have no difficulty in concluding that the strata in which they were found were all formed in the nineteenth century. The petrified shells and other remains found in geological strata are such coins. Every great formation has had its own characteristic fauna and flora, or aggregate of animal and vegetable life, varying slowly from one geological age to another, and linked to the past and future by some persistent types and forms, but still with such a preponderance of characteristic fossils as to enable us to assign the rocks in which they occur to their proper place in the volume of the geological record. Innumerable observations have shown that we can rely, with absolute confidence, on the fossils embedded in the different strata of the earth's crust as tests of the period to which they belong, however different the strata may be in mineral composition.

The next question is how we can ascertain the thickness and order of succession of these strata. We have seen that all stratified rocks are due to the action of water, and therefore were originally deposited horizontally. Had they remained so, in the first place, the process of forming stratified rocks must long ago have come to an end, for all the land

surface must have been worn down to the sea level, and, with no more land to be denuded, deposition must have ceased at an early period of the earth's history. In the second place, we could have known nothing more of the earth's crust than we saw on the surface, and in the shallow pits and borings which we could sink below it. But earthquakes and volcanoes, and the various fractures and pressures due to subterranean heat and secular contraction and cooling, have been at work counteracting the effects of denudation, and causing elevations and depressions by which the inequalities of the earth's surface have been renewed, the balance between sea and land maintained, and strata, originally horizontal at the bottom of the ocean, upheaved until sea-shells are found at the top of high mountains, so that we can walk for miles over their upturned edges.

Any one who wishes to understand how geologists have been able to measure such a thickness of the earth's crust has only to take a book open at page 1 and lay it flat before him. He can see nothing but that one page; but if he turns up the pages on the right-hand side of the book until their edges become horizontal, he can pass over them and count perhaps 500 pages in the space of a couple of inches.

This is precisely what geologists have been able to do at various points of the earth's surface where the upturned edges of the pages of its history are exposed, and they come out, one behind the other, in the due succession in which they were written by Nature. For instance, in travelling from east to west in England we pass continually from newer to older formations—Chalk comes in from below Tertiary; Oolite and Lias from below Chalk; then Permian or New Red Sandstone; Carboniferous, including the Coal Measures; Devonian or Old Red Sandstone; Silurian, Cambrian, and in the extreme north-west of Scotland and the Hebrides, oldest of all, the Laurentian.

There are some omissions and interpolations, but, in a general way, it may be said that within the bounds of the British Empire we have such a view of Nature's volume as would be got, in the case I have supposed, by travelling over its upturned edges from page 1 to page 400. And if each of the great formations

be taken as a separate chapter, each chapter will be found to be made-up of a number of pages, each with its own letterpress and illustrations, though connected with the pages before and after it by the thread of the continuous common subject of their proper chapter; as the chapters again are connected by the continuous common subject-matter of the complete volume. It must not be supposed that the volume is anything like perfect. We have to piece it together from the fragments found in the limited number of countries which have thus far been scientifically explored, and which do not constitute more than a small part of the earth's surface. We know nothing of what is below the oceans which cover more than three-fourths of that surface, and there are great gaps in the record during the times when portions of the surface were dry land, and when, consequently, no deposit of strata or preservation of fossils was possible. Still a great deal has been accomplished, and the general result, as given by common consent of the best geologists, is as follows:

The total thickness of known strata is about 130,000 feet or twenty-five miles, or the $\frac{1}{160}$ th part of the distance from the earth's surface to its centre. Of this, about 30,000 feet belong to the Laurentian, which is the oldest known stratified deposit; 18,000 to the Cambrian, and 22,000 to the Silurian. These earliest formations, which are grouped as the Primary or Palæozoic Epoch, have been so changed by slow crystallisation under great heat and pressure that all fossils and nearly all traces of stratification have been well-nigh obliterated.

In the Cambrian and Lower Silurian traces of life become more frequent, especially of low forms of seaweeds, and in the Upper Silurian we find an abundance of fossils, consisting of crustacea, shell-fish, and a few true fish in the upper strata. Some of the shells, as the *Lingula*, have continued without much change up to the present time; and on the whole we find ourselves in the Silurian period, if not earlier, in presence of a state of things in which substantially present causes operated and present conditions were in force. Rains fell, winds blew, rivers ran, waves eroded cliffs, shell-fish lived and died, and crabs and sand-worms crawled about on shores left

dry by each tide, very much as is the case at present.

The next great division, to which the name of Primary was given before the existence of fossils was known in the older or Palæozoic division, comprises the Devonian or Old Red Sandstone; the Carboniferous, which includes the coal; and the Permian or New Red Sandstone. The average thickness of these three systems, taken together, is about 42,000 feet. It may be called the era of Fern Forests and of Fish, the former being the principal source of our supplies of coal, and the latter being extremely abundant within the Devonian and Permian formations.

The third great division is formed by the Secondary group, which includes the Triassic, the Jura, and the Cretaceous or Chalk systems, and has an average thickness of about 15,000 feet. This epoch is emphatically the age of Reptiles as the preceding one was that of Fish, and the prevailing vegetation is no longer one of ferns and mosses, but of Gymnosperms, or plants having naked seeds, the most important class of which is that of the Coniferæ or Pine tribe. During this period the Plesiosaurs, Ichthyosaurs, and other gigantic sea-dragons abounded in the oceans; colossal land-dragons, such as the Dinosaurs, occupied the continents, and Pterodactyls, a remarkable form of carnivorous flying lizards, ruled the air. Swarms of other reptiles, nearly related to the present lizards, crocodiles, and turtles, abounded both in the sea and land. A few traces of mammals and birds show that these orders had then come into existence, just as a few traces of reptiles are found in the Primary, and of fish in the Palæozoic, strata, but the few mammalian remains found are of small animals of the marsupial or lowest type, and the birds are of a transition type between reptiles and true birds. This epoch concludes with the Chalk formation, which is one of relatively deep-sea deposit, where no trace of terrestrial life can be expected.

Above this comes the Tertiary epoch, when the present order, both of vegetable and animal life, is fairly inaugurated; mammals predominate over other forms of vertebrate animals; existing orders and species begin to appear and increase rapidly; and vegetation consists mainly of Angiosperms, or plants with

covered seeds, as in our present forest. The total thickness of these strata, from the lowest, or Eocene, to the end of the uppermost, or Pliocene, is about 3,000 feet. Above this comes the Quaternary, or recent period, which comprises the superficial strata of modern formation, and is characterised by the undoubted existence of man, and of animals which either now exist, or which have become extinct in quite recent geological times.

The details of this and of the Tertiary Epoch will be more fully considered when we come to treat of the antiquity of man, with which they are closely connected. But for the present object, which is that of ascertaining some standard of time for the immense series of ages proved by geology to have elapsed since the earth assumed its present condition, became subject to existing laws and fitted to be the abode of life, it will be sufficient to refer to the older strata.

The best idea of the enormous intervals of time required for geological changes will be derived from the coal measures. These consist of part only of one geological formation known as the Carboniferous. They are made up of sheets, or seams, of condensed vegetable matter, varying in thickness from less than an inch to as much as thirty feet, and lying one above another, separated by beds of rock of various composition. As a rule, every seam of coal rests upon a bed of clay, known as the "under-clay," and is covered by a bed of sandstone or shale. These alternations of clay, coal, and rock, are often repeated a great many times, and in some sections in South Wales and Nova Scotia there are as many as eighty or a hundred seams of coal, each with its own under-clay below and sandstone or shale above. Some of the coal seams are as much as thirty feet thick, and the total thickness of the coal measures is, in some cases, as much as 14,000 feet.

Now consider what these facts mean. Every under-clay was clearly once a surface soil on which the forest vegetation grew, whose accumulated *débris* forms the overlying seam of coal. The under-clays are full of the fibres of roots, and the stools of trees which once grew on them are constantly found *in situ*, with their roots attached just as they stood when the tree fell; and added to the accumulation of vegetable matter, which in modern times forms peat, and in more ancient

...under different conditions of heat and pressure, took the more consolidated form of coal.

When these vegetable remains are examined with the aid of the microscope it is found that these ancient forests consisted mainly of trees like gigantic club-mosses, mare's-tails, and tree ferns, with a few resembling yews and firs. But in many cases the bulk of the coal is composed of the spores and seeds of these ferns and club-mosses, which were ripened and shed every year, and gradually accumulated into a vegetable mould, just as fallen leaves, beech-mast, and other debris, gradually form a soil in our existing forests.

The time required must have been very great to accumulate vegetable matter, principally composed of fine spore dust, to a depth sufficient under great compression to give even a foot of solid coal. Sir J. W. Dawson, who has devoted great attention to the coal-fields of America, says: "We may safely assert that every foot of thickness of pure bituminous coal implies the quiet growth and fall of at least fifty generations of *Sigillaria*, and therefore an undisturbed condition of forest growth, enduring through many centuries." But this is only the first step in the measure of the time required for the formation of the coal measures. Each seam of coal is, as we have seen, covered by a bed of sand or shale, i.e., of water-borne materials. How can this be accounted for? Evidently in one way only—that the land surface in which the forest grew subsided gradually until it became first a marsh, and then a lagoon or shallow estuary, which silted up by degrees with deposits of sand or mud, and, finally, was raised until its surface became dry land, in which a second forest grew, whose debris formed a second coal seam. And so on, over and over again, until the whole series of coal measures had been accumulated, when this alternation of slight submergences and slight rises came to an end, and some more decided movement of the earth's surface in the locality brought on a different state of things. This is in fact exactly what we are taking place on a smaller scale in recent times in such deposits as those of the delta of the Mississippi, where a well bank at New Orleans passes through a succession of cypress swamps and forest

growths, exactly like those now growing on the surface, which are piled on the other, and separated by deposits of river silt, showing a long alternation of periods of rest when forests grew, followed by periods of subsidence when they were flooded and their remains were embedded in silt.

Starting on the foregoing assumption that one foot of coal represents fifty generations of coal plants, and that each generation of coal plants took ten years to come to maturity, an assumption which is certainly very moderate; and taking the actually measured thickness of the coal measures in some localities at 12,000 feet, Professor Huxley calculates that the time represented by the Coal formation alone would be six millions of years. Such a figure is, of course only a rough approximation, but it is sufficient to show that when we come to deal with geological time, the standard by which we must measure is one of which the unit is a million of years.

This standard is confirmed by a variety of other considerations. Take the case of the Chalk formation.

Chalk is almost entirely composed of the microscopic shells of minute organisms, such as now float in the upper strata of our great oceans, and by their subsidence, in the form of an impalpable shell-dust, accumulate what is called the "Globigerina ooze," which is brought up by soundings in the Atlantic and Pacific from great depths. In fact, we may say that a chalk formation is now going on in the depths of existing oceans, and conversely that the old chalk, which now forms hills and elevated downs, was certainly deposited at the bottom of Cretaceous seas. The rate of deposit must have been extremely slow, certainly much slower than that of the deposit of the much grosser matter brought down by the Nile in its annual inundations, the growth of which has been estimated from actual measurement at about three inches per century. If one inch per century were the rate of accumulation of this microscopic shell-dust, subsiding slowly to depths of two or three miles over areas as large as Europe, it would take 1,200 years to form a foot of chalk, and 1,200,000 years to form 1,000 feet. Now there are places where the thickness of the Cretaceous formation, exposed by the edges of its upturned strata, exceeds

so that this gives an approximation very similar to that furnished by the actual measures.

We have thus, on a rough approximation, a *minimum* period of about 6,000,000 years for the accumulation of a single member of one of the separate formations into which the total 130,000 feet of measured strata are subdivided. But this takes no account of the long periods during which no accumulation took place at the localities in question, and of the long pauses which must have ensued between each movement of elevation and submergence, and especially between the disappearance of an old, and the appearance of an almost entirely new, epoch, with different forms of animal and vegetable life. We may be certain also that we are far from knowing the total thickness of strata which will be disclosed when the whole surface of the earth comes to be explored. All we can say is that we have fragmentary pages left in the geological record, speaking broadly, for 100 millions of years, and that probably the lost pages are quite as numerous as those of which we have an imperfect knowledge.

Sir Charles Lyell, the highest authority on the subject, is inclined to estimate the *minimum* of geological time at 200 millions of years, and few geologists will say that his estimate appears excessive.

Another test of the vast duration of geological time is afforded by the oscillations of the earth's surface. At first sight we are apt to consider the earth as the stable and the sea as the unstable element. But in reality it is exactly the reverse. Land has been perpetually rising and falling while the level of the sea has remained the same. This is easily proved by the presence of sea-shells and other marine remains in strata which now form high mountains. In the case of chalk, for instance, there must have been in England a change of relative level of sea and land of more than two miles of vertical height, between the original formation of the chalk at the bottom of a deep ocean and its present position in the North and South Downs. In other cases the change of level is even more conspicuous. The Nummulitic limestone, which is formed like chalk from an accumulation of the minute shells of low organisms floating in the oceans of the early Tertiary

period, is found in mountain masses, and has been elevated to a height of 10,000 feet and more in the Alps and Himalayas.

On a smaller scale, and in more recent times, raised beaches with existing shore and lines of cliffs and caves, are found at various heights above the existing sea-level of many of the coasts of Britain, Scandinavia, Italy, South America, and other countries.

Now the first question is, were these changes caused by the land rising or by the sea falling? The answer is, by the land rising. Had they been caused by the sea standing at a higher level it must have stood everywhere at this level, at any rate in the same hemisphere and anywhere near the same latitude. But there are large tracts of land which have never been submerged since remote geological periods; and in recent times there is conclusive evidence that the changes of level of sea and land have been partial and not general. Thus in the well-known instance of the columns of the ruined temple of Serapis at Pozzuoli in the Bay of Naples, which forms the illustration on the title-page of Lyell's "Principles of Geology," there can be no doubt that since the temple was built, either the sea must have risen and since fallen, or the land sunk and since risen, at least twenty feet since the temple was built less than 2,000 years ago, for up to this height the marble columns are riddled by borings of marine shells, whose valves are still to be seen in the holes they excavated. But an elevation of the level of the Mediterranean of twenty feet would have submerged a great part of Egypt, and other low-lying lands on the borders of that sea, where we know that no such irruptions of salt water have taken place within historical, or even within recent geological, times.

The conclusion is therefore certain, that the land at this particular spot must have sunk twenty feet, and again risen as much, so as to bring back the floor of the temple to its present position, which stood one hundred years ago just above the sea-level, and that so gradually as not to throw down the three columns which are still standing. A slow subsidence has since set in and is now going on, so that the floor is now two or three feet below the sea-level.

Similar proofs may be multiplied

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any extent. Along the coasts of the British Islands we find, in some places submarine forests showing subsidence, in others raised beaches showing elevation, but they are not continuous at the same level. Along the east coast of Scotland there is a remarkable raised beach at a level of about twenty-four feet above the present one, showing in many places lines of cliff, sea-worn caves, and outlying stacks and skerries, exactly like those of the present coast, though with green fields or sandy links at their base, instead of the waves of the German Ocean. But as we go north this inland cliff gets lower and gradually dies out, and when we get into the extreme north, among the Orkney and Shetland Islands, there are no signs of raised beaches, and everything points towards the recent period having been one of subsidence.

Again, in Sweden, where marks were set in rocks in sheltered situations on the well-nigh tideless Baltic more than a century ago, so as to test the question of an alleged elevation of the land, it has been clearly shown that in the extreme north of Sweden, the marks have risen nearly seven feet, while in the central portion of the country they have neither risen nor fallen, and in the southern province of Scania they have fallen.

This would be clearly impossible if the sea and not the land had been the unstable element, and apparent elevations and depressions had been due to a general fall or rise in the level of all the seas of the northern hemisphere.

In fact, the more we study geology the more we are impressed with the fact that the normal state of the earth is, and has always been, one of incessant changes. Water, raised by evaporation from the seas, falls as rain or snow on land, wastes it away and carries it down from higher to lower levels, to be ultimately deposited at the bottom of the sea. This goes on constantly, and if there were no compensating action, as the seas cover a much larger area than the lands, all land would ultimately disappear, and one universal ocean cover the globe. But inward heat supplies the compensating action, and new lands rise and new mountain chains are upheaved to supply the place of those which disappear.

This inward heat of the earth is an ascertained fact; for as we descend from the surface in deep mines or borings, we

find that the temperature actually does increase at a rate which varies somewhat in different localities, but which averages about 1° Fahrenheit for every 60 feet of depth. At this rate of increase water would boil at a depth of 10,000 feet, and iron and all other metals be melted before we reached 100,000 feet. What actually occurs at great depths we do not know with any certainty, for we are not sufficiently acquainted with the laws under which matter may behave when under enormous heat combined with enormous pressure. But we do know from volcanoes and earthquakes that masses of molten rocks and of imprisoned gases exist in certain localities, at depths below the surface which, although large compared with our deepest pits, are almost infinitesimally small compared with the total depth of 4,000 miles from that surface to the earth's centre.

This much is clear, that, in order to account for observed facts, we must consider the extreme outer crust, or surface of the earth as known to us, as resting on something which is liable to expand and contract slowly with variations of heat, and occasionally, when the tension becomes great, to give violent shocks to the outer crust, sending earthquake waves through it, and to send up gases and molten lava through volcanoes, along lines of fissure, and at points of least resistance. It is clear, also that these movements are not uniform, but that one part of the earth's surface may be rising while another is sinking, and portions of it may be slowly tilting over, so that as one end sinks the other rises.

The best comparison that can be made is to a sheet of ice which has been much skated over and cracked in numerous directions, so as to have become a sort of mosaic of ice fragments, which, when a thaw sets in and the ice gets sloppy, rise and fall with slightly different motions as a skater, gliding over them, varies the pressure, and occasionally give a crack and let water rise through from below in the line of fissure. The difficulty will not seem so great if we consider that the rocks which form the earth's crust are for the most part elastic, and that an amount of elevation which seems large in itself does not necessarily imply a very steep gradient. Thus, if the elevation which towards the close of the Glacial period carried a bed of exist-

ing sea-shells of Arctic type to the top of the hill, Moel Tryfen, in North Wales, which is 1,200 feet high, were, say, one of 1,500 feet, this would be given by a gradient of 15 feet a mile, or 1 in 333 for 100 miles. Such a gradient would not be perceptible to the eye, and would certainly not be sufficient to cause any tension likely to rupture rocks or disturb strata.

Such movements are as a rule extremely slow. In volcanic regions there are occasionally shocks which raise extensive regions a few feet at a blow, and partial elevations and subsidences which throw up cones of lava and cinders, or let mountains down into chasms, in a single explosion. The most noted of these are the instances of Monte Nuovo, near Naples, 800 feet high, and Jorullo, in Mexico, thrown up in one eruption, and the disappearance of a mountain 2,000 feet high in the Straits of Sunda during an earthquake. The largest rise recorded of an extensive area from the shock of an earthquake, is that which occurred in South America in 1835, when a range of coast of 500 miles from Copiapo to Chiloe was permanently raised five or six feet by a single shock, as was shown by the beds of dead mussels and other shells which had been hoisted up in some places as much as ten feet. It is probable that the great chain of the Andes, whose highest summits reach 27,000 feet, has been raised in a great measure by a succession of similar shocks.

But for the most part these movements, whether of elevation or depression, go on so slowly and quietly that they escape observation. Scandinavia is apparently now rising and Greenland sinking, but most countries have remained appreciably steady, or nearly so, during the historical period. St. Michael's Mount, in Cornwall, is still connected with the mainland by a spit, dry at ebb tide and covered at flood, as it was more than 2,000 years ago when the old Britons carted their tin across to Phœnician traders. Egypt, during a period of 7,000 years, has preserved the same level, or at the most has sunk as slowly as the Nile mud has accumulated. Parts of the English and Scotch coast have risen perhaps twenty feet since the prehistoric period, when canoes were wrecked under what are now the streets of Glasgow, and whales were stranded in

the Carse of Stirling. There is even some evidence that the latest rise may have occurred since the Roman wall was built from the Forth to the Clyde. In any case, however, the movements have been extremely slow, and there have been frequent oscillations, and long pauses when the level of land and sea remained stationary. The evidence, therefore, from the great changes which have occurred during each geological period, points to the same conclusion as that drawn from the thickness of formations, such as the coal measures and chalk, which must have been accumulated very slowly, viz., that geological time must be measured by a scale of millions of years.

Another test of the vast duration of geological time is afforded by the changes which have taken place in animal life as we pass from one formation to another, and even within the limits of the same formation. The fauna, or form of existing life at a given period, changes with extreme slowness. During the historical period there has been no perceptible change, and even since the Pliocene period, which cannot be placed at a less distance from us than 200,000 years, and probably at much more, the change has been very small. In the limited class of large land animals it has been considerable; but if we take the far more numerous forms of shell-fish and other marine life, the old species which have become extinct and the new ones which have appeared, do not exceed five per cent. of the whole. This is the more remarkable as great vicissitudes of climate and variations of sea-level have occurred during the interval. The whole of the Glacial period has come and gone, and Britain has been by turns an archipelago of frozen islands, and part of a continent extending over what is now the German Ocean, and pushing out into the Atlantic up to the one hundred fathom line.

Reasoning from these facts, assuming the rate of change in the forms of life to have been the same formerly, and summing up the many complete changes of fauna which have occurred during the separate geological formations, Lyell has arrived at the conclusion that geology requires a period of not less than 300 millions of years to account for the phenomena which it discloses.

Long as the record is of geological

it is only that of one short chapter in the volume of the history of the universe. Geology only begins when the earth had cooled down into a state resembling the present; when winds blew, rains fell, rivers and seas eroded rocks and formed deposits, and when the conditions were such that life became possible by the remains of which those deposits can be identified.

But before this period began, which may be called that of the maturity or middle age of our planet, a much vaster time must be allowed for the contraction and cooling of the vaporous matter of which it is formed, into the state in which the phenomena of geology became possible. And if vast in the case of the earth, how much vaster must be the life-periods of the larger planets, such as Jupiter, which from their much greater size cool and contract much more slowly, and are not yet advanced beyond the stage of intense youthful heat and glowing luminosity which was left behind by our earth a great many tens of millions of years ago! And how vastly later must be that of the sun, whose mass and volume exceed those of Jupiter in a far higher ratio than Jupiter surpasses the earth!

And beyond all this in a third degree of vastness come the life-periods of those stars or distant suns, which we know to be in some cases as much as three hundred times larger than our sun, and yet nearly so far advanced as it in the process of emergence from the fiery nebulous into the solar stage.

To give some idea of the vast intervals of time required for these changes, a few facts and figures may be given.

One of the latest speculations of mathematical science is that the rotation of the earth is becoming slower, or, in other words, that the day is becoming longer, owing to the retarding action of the tides, which act as a brake on a revolving wheel. If so, the effect of the reaction of the moon on this action of the moon on the earth, must be that as the earth rotates more slowly, the moon recedes to a greater distance. And the more, when the earth rotated more rapidly the moon was nearer to it, until at length, when the process is carried back far enough, we arrive at a time when the moon was at the earth's surface and the length of the day about

three hours. In this state of things the moon is supposed to have been torn off from the earth, either by one great convulsion, or, more probably, by great masses at a time forming a ring-like one of Saturn, which ended by coalescing into a single satellite. With the moon, which is the principal cause of the tides, so much nearer the earth, their rise and fall must have been something enormous, and huge tidal waves like the bore of the Bay of Fundy, but perhaps 500 or 1,000 feet high, must have swept twice during each revolution of the earth on its axis, i.e., twice every three or four hours, along all the narrower seas and channels and over all except the mountainous lands adjoining.

Now these conclusions may be true or not as regards phases of the earth's life prior to the Silurian period, from which downwards geology shows unmistakably that nothing of the sort, or in the least degree approaching to it, has occurred. But what I wish to point out is that all this superstructure of theory rests on a basis which really does admit of definite demonstration and calculation.

Halley found that when eclipses of the sun, recorded in ancient annals, are compared with recent observations, a discrepancy is discovered in the rate of the moon's motion, which must have been slightly slower then than it is now. Laplace apparently solved the difficulty by showing that this was an inevitable result of the law of gravity, when the varying eccentricity of the earth's orbit was properly taken into account; and the calculated amount of the variation from this cause was shown to be exactly what was required to reconcile the observations. But our great English mathematician, Adams, having recently gone over Laplace's calculations anew, discovered that some factors in the problem had been omitted, which reduced Laplace's acceleration of the moon's motion by about one-half, leaving the other half to be explained by a real increase in the length of the sidereal day, or time of one complete revolution of the earth about its axis. The retardation required is one sufficient to account for the total accumulated loss of an hour and a quarter in 2,000 years; or, in other words, the length of the day is now more by about $\frac{1}{16}$ th part of a second than it was 2,000 years ago.

At this rate it would require 168,000

...to a difference of 1 second in the day; 10,080,000 years for a difference of 1 minute; and 604,800,000 years for a difference of 1 hour. The rate would not be uniform for the past, as as the moon got nearer it would cause higher tides and more retardation; still, the abyss of time seems almost inconceivable to get back to the state in which the earth could have rotated in three hours and thrown off the moon.

It is right, however, to state that all mathematical calculations of time, based on the assumed rate at which cosmic matter cools into suns and planets, and these into solid and habitable globes, are in the highest degree uncertain. If the original data are right, mathematical calculation inevitably gives right conclusions. But if the data are wrong, or, what is the same thing, partial and imperfect, the conclusions will, with equal certainty, be wrong also. Now in this case we certainly do not know "the truth, the whole truth, and nothing but the truth" respecting these processes. Take what is perhaps the most difficult problem presented by science—how the sun keeps up so uniformly the enormous amount of heat which it is constantly radiating into space. This radiation is going on in every direction, and the solar heat received by the earth is only that minute portion of it which is intercepted by our little speck of a planet. All the planets together receive less than one 230,000,000th part of the total heat radiated away by the sun and apparently lost in space. Knowing the amount of heat from the sun's rays received at the earth's surface in a given time, we can calculate the total amount of heat radiated from the sun in that time. It amounts to this, that the sun in each second of time parts with as much heat as would be given out by the burning of 16,436 millions of millions of tons of the best anthracite coal. And radiation certainly at this rate, if not a higher one, has been going on ever since the commencement of the geological record, which must certainly be reckoned by a great many tens of millions of years.

What an illustration does this afford of that apparent "waste of Nature" which made Tennyson "falter where he firmly trod" when he came to consider "her secret meaning in her deeds"!

Yet there can be no doubt that vast as

these figures are, they are all the result of natural laws, just as we find the law of gravity prevailing throughout space at distances expressed by figures equally vast. The question is, what laws? The only one we know of at present at all adequate to account for such a generation of heat, is the transformation into heat of the enormous amount of mechanical force or energy, resulting from the condensation of the mass of nebulous matter from which the sun was formed, into a mass of its present dimensions. This is no doubt a true cause as far as it goes. It is true that as the mass contracts, heat would be, so to speak, squeezed out of it, very much as water is squeezed out of a wet sponge by compressing it. But it is a question whether it is the sole and sufficient cause. Mathematicians have calculated that even if we suppose the original cosmic matter to have had an infinite extension, its condensation into the present sun would only have been sufficient to keep up the actual supply of solar heat for about 15 millions of years. Of this a large portion must have been exhausted before the earth was formed as a separate planet, and had cooled down into a habitable globe. But even if we took the whole it would be altogether insufficient. All competent geologists are agreed in requiring at least 100 millions of years to account for the changes which have taken place in the earth's surface since the first dawn of life recorded in the older rocks.

Various attempts have been made to reconcile the discrepancy. For instance, it has been said that the constantly repeated impact of masses of meteoric and cometic matter falling into the sun must have caused the destruction of a vast amount of mechanical energy which would be converted into heat. This is true as far as it goes, but it is impossible to conceive of the sun as a target kept at a perpetual and uniform white heat for millions of years by a rain of meteoric bullets constantly fired upon it. More plausibly it is said that we know nothing of the interior constitution of the sun, and that its solid nucleus may be vastly more compressed than is inferred from the dimensions of its visible disc, which is composed of glowing flames and vapours. This also may be a true cause, but, after making every allowance, we must fall back on the statement that the

continuance for such enormous periods of such an enormous waste of energy as is given out by the sun, though certainly explainable by laws of Nature, depends on laws not yet thoroughly understood and explained.

Even in the case, comparatively small and near to us, of the earth, the condition of the interior and the rate of secular cooling afford problems which as yet wait for solution. The result of a number of careful experiments in mines and deep sinkings shows that the temperature, as we descend below the shallow superficial crust which is affected by the seasons, *i.e.*, by the solar radiation, increases at the average rate of 1° Fahrenheit for every 80 feet of depth. That is the average rate, though it varies a good deal in different localities. Now, at this rate we should soon reach a depth at which all known substances would be melted.

But astronomical considerations, derived from the Precession of the Equinoxes, favour the idea that the earth is a solid and not a fluid body, and require us in any case to assume a rigid crust of not less than ninety miles in thickness. And if the whole earth below a thin superficial crust were in an ordinary state of fluidity from heat, it is difficult to see how it could do otherwise than boil, that is, establish circulating currents throughout its mass with disengagement of vapour, in which case the surface crust must be very soon broken up and melted down, just as the superficial crust of a red-hot stream of lava is, if an infusion of fresh lava raises the stream below to white heat, or as a thin film of ice would be if boiling water were poured in below it.

All we can say is, that the laws under which matter behaves under conditions of heat pressure, chemical action, and electricity so totally different as must prevail in the interior of the earth, and *a fortiori* in that of the sun, are as yet very partially known to us. In the meantime the safest course is to hold by those conclusions of geology which, as far as they go, depend on laws really known to us. For instance, the quantity of mud carried down in a year by the Ganges or Mississippi is a quantity which can be calculated within certain approximate limits. We can tell with certainty how much the deposit of this amount of mud would raise an area, say of 100 square

miles, and how long it would take, at this rate, to lower the area of India drained by the Ganges a sufficient number of feet to give matter enough to fill up the Gulf of Bengal. And if among the older formations we find one, like the Wealden, for instance, similar in character to that now forming by the Ganges, we can approximate from its thickness to the time that may have been required to form it.

In calculations of this sort there is no *theory*, they are based on positive facts, limited only by a certain possible amount of error either way. In short, the conclusions of geology, at any rate up to the Silurian period, when the present order of things was fairly inaugurated, are approximate facts and not *theories*, while the astronomical conclusions are *theories* based on data so uncertain, that while in some cases they give results incredibly short, like that of 15 millions of years for the whole past process of the formation of the solar system, in others they give results almost incredibly long, as in that which supposes the moon to have been thrown off when the earth was rotating in three hours, while the utmost actual retardation claimed from observation would require 600 millions of years to make it rotate in twenty-three hours instead of twenty-four.

To one who looks at these discussions between geologists and astronomers not from the point of view of a specialist in either science, but from that of a dispassionate spectator, the safest course, in the present state of our knowledge, seems to be to assume that geology really proves the duration of the present order of things to have been somewhere over 100 millions of years, and that astronomy gives an enormous though unknown time beyond in the past, and to come in the future, for the birth, growth, maturity, decline, and death of the solar system of which our earth is a small planet now passing through the habitable phase.

So far, however, as the immediate object of this work is concerned, *viz.*, the bearings of modern scientific discovery on modern thought, it is not very material whether the shortest or longest possible standards of time are adopted. The conclusions as to man's position in the universe, and the historical truth or falsehood of old beliefs, are the same whether man has existed in a state of constant though slow progression for the

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last 50,000 years of a period of 15 millions, or for the last 500,000 years of a period of 150 millions. It is a matter of the deepest scientific interest to arrive at the truth, both as to the age of the solar system, the age of the earth as a body capable of supporting life, the successive orders and dates at which life actually appeared, and the manner and date of the appearance of the most highly organised form of life endowed with new capacities for developing reason and conscience in the form of Man. Those who wish to prove themselves worthy of their great good luck in having been born in a civilised country of the nineteenth century, and not in Paleolithic periods, will do well to show that curiosity, or appetite for knowledge, which mainly distinguishes the clever from the stupid and the civilised from the savage man, by studying the works of such writers as Lyell, Huxley, Tyndall, and Proctor, where they will find the questions which here are only briefly stated, developed at fuller length with the most accurate science and in the clearest and most attractive style. But for the moral, philosophical, and religious bearings of these discoveries on the current of modern thought, there is such a wide margin that it becomes almost immaterial whether the shortest possible or longest possible periods should be ultimately established.

CHAPTER III

MATTER

Matter and Motion—Light, Colour, and Heat—Matter and its Elements—Molecules and Atoms—Spectroscope—Uniformity of Matter throughout the Universe—Force and Motion—Conservation of Energy—Electricity, Magnetism, and Chemical Action—Dissipation of Heat—Birth and Death of Worlds.

THE contents of the material universe may be expressed in terms of Matter and of Motion. Matter exists in the three-fold and interrelated states known as solid, liquid, and gaseous, and it is convenient to include with these the apparently fourth state called the ethereal. The existence of this last-named is an

hypothesis by which alone can we account for the phenomena of light and heat, and, as the marvellous researches of Hertz have shown, of the electro-magnetic waves which confirm the theory of connection between electricity, magnetism, light, and radiant heat. More than this we cannot assume regarding ether, for all ponderable matter,—solids, liquids, gases—consists of ultimate molecules, and we do not know whether ether is non-molecular or imponderable.

Dealing with Motion, it has been shown that light radiates in all directions from a luminous centre, travelling at the rate of 186,000 miles per second. Now what is light? It is a sensation produced on the brain by something which has been concentrated by the lens of the eye on the retina, and thence transmitted along the optic nerve to the brain, where it sets certain molecules vibrating. What is the something which produces this effect? Is it a succession of minute particles, shot like rifle-bullets from the luminous body and impinging on the retina as on a target? Or is it a succession of tiny waves breaking on the retina as the waves of the sea break on a shore? Analogy suggests the latter, for in the case of the sister sense, sound, we know as a fact that the sensation is produced on the brain by waves of air concentrated by the ear, and striking on the auditory nerve. But we have a more conclusive proof. If one of a series of particles shot out like bullets overtakes another, the force of impact of the two is increased; but if one wave overtakes another when the crest of the pursuing wave just coincides with the hollow of the wave before it the effect is neutralised, and if the two are of equal size it will be exactly neutralised and both waves will be effaced. In other words, two lights will make darkness. This, therefore, affords an infallible test. If two lights can make darkness, light is propagated, like sound, by waves. Now two lights do constantly make darkness, as is proved every day by numerous experiments. Therefore light is caused by waves.

But to have waves there must be a medium through which the waves are propagated. Without water you could not have ocean waves; without air you could not have sound-waves. Waves are in fact nothing but the successive forms assumed by a set of particles which

From other luminous sources is similarly treated, it is found that all elementary substances have their peculiar spectra. Light from solid or liquid substances gives a continuous spectrum, light from gases or glowing vapours gives a spectrum of bright lines separated from each other, but always in definite positions according to the nature of the substance. The next great step in the discovery was that these bright lines become dark lines when a light of greater intensity, coming from a solid nucleus, is transmitted through an atmosphere of such gases or vapours. We can thus photograph the spectrum of glowing hydrogen, sodium, iron, or other substances, and placing it below a photograph of a solar or stellar spectrum, see if any of the dark lines of the latter are coincident in position with the bright lines of the former. If they are, we may be certain that these substances actually exist in the sun or star. It is, in fact, just the same thing as if we had been able to bring down a jar-full of the solar or stellar matter and analyse it in our laboratories.

It is difficult to convey any adequate description of these grand discoveries made by the new science of spectroscopy without referring to special works on the subject; but it may be possible to give some general idea of the principles on which they are based.

As has been shown, light consists of waves propagated through ether. These waves are started by the vibrations of the ultimate particles of matter, which, whether in the simplest form of atoms, or in the more complex form of molecules, or in the still more complex form of compound molecules, have their own peculiar and distinct vibrations. These vibrations are increased, diminished, or otherwise modified by variations of heat and by the collisions which occur between the particles from their own proper motions. If we take the simplest case, that of matter in the form of a gas or vapour composed of single atoms, at a temperature just sufficient to become luminous and at a pressure small enough to keep the atoms widely apart, the vibrations are all of one sort, viz., that peculiar to the elementary substance to which they belong, and one set of waves only is propagated by them through the ether. The spectrum, therefore, of such a gas is a single line of light, in the definite position which is due to its

refrangibility, i.e., to the velocity of the particular wave of light which the particular vibration of those particular atoms is able to propagate.

When pressure is increased so that the particles are brought closer together, their vibrations made more energetic, and their collisions more frequent, more waves, and waves of different qualities are started, and more lines appear in the spectrum and the lines widen out, until at length when the gas becomes very dense, some of the lines overlap and an approach is made towards a continuous spectrum. Finally, when the particles are brought so near together that the substance assumes a fluid or solid state, the number of wave-producing vibrations becomes so great that a complete system of different light-waves is propagated, and the lines of the spectrum are multiplied until they coalesce and form a continuous band of rainbow-tinted light. If the particles of the gas, instead of being single atoms, are more complex, as molecules or compound molecules, the vibrations are more complex and the different resulting light-waves more numerous, so that the lines in the spectrum are more numerous, and in some cases they coalesce so as to form shaded bands, or what are called fluted lines, instead of simple lines.

Moreover, whatever light-waves are originated by the vibrations of the particles of gas are absorbed into those vibrations and extinguished, if they originate from the vibrations of some more energetic particles of another substance outside of it, whose light-waves, travelling along the ether, pass through the gas, and are thus shown as dark lines in the spectrum of the other source of light.

We can now understand how the assertion is justified that we can analyse the composition of the sun and stars as certainly as if we had a jar full of their substance to analyse in our laboratory. The first glance at a spectrum tells us whether the luminous source is solid, fluid, or gaseous. If its spectrum is continuous it is solid or fluid; we know this for certain, but can tell nothing more. But if it consists of bright lines, we know that it comes direct from matter in the form of luminous gas, and knowing from experiments in the laboratory the exact colours and situations of the lines formed by the different elements of which earthly

composed, we can see whether the lines in the spectra of heavenly matter correspond with any of them. If bright lines correspond we are sure that the substances correspond, both as to their elementary atoms and their condition as glowing gas. If dark lines in the spectrum of the heavenly body correspond with bright lines in that of a known earthly substance, we are certain that the substances are the same and in the same state of gas, but that the solar or stellar spectrum proceeds from an intensely heated interior solid or fluid nucleus, whose waves have passed through an outer envelope or atmosphere of this gas.

Applying these principles, although the science is still in its infancy and many interesting discoveries remain to be made, this grand discovery has become an axiomatic fact—Matter is alike everywhere. The light of stars up to the extreme boundary of the visible universe is composed mainly of glowing hydrogen, the same identical hydrogen as we get by decomposing water by a voltaic battery.

Of the 76 elementary substances enumerated by chemists, 36 are known certainly to exist in the sun's atmosphere. The elements whose presence is proved comprise many of those which are most common in the composition of the earth, as hydrogen, carbon, iron (represented by about 2,000 lines in the solar spectrum), lead, calcium, aluminium, magnesium, sodium, potassium, etc.; and if others, such as oxygen, nitrogen, and chlorine have not yet been found, the explanation is that when a mixture of the incandescent vapours of the metals and metalloids (or non-metallic elementary substances, to which class both oxygen and nitrogen belong), or their compounds, is examined with the spectroscopic, the spectra of the metalloids always yield before that of the metals. Hence the absence of the lines of oxygen and other metalloids, carbon and silicon excepted, among the vast crowd of lines in the solar spectrum. Then, too, in extreme states of refraction of the sun's absorbing layer, the absorption of the oxygen is too small to be sensible to us. The main fact is firmly established that matter is the same throughout all space, from the minutest atom to the remotest star.

Thus far we have been treating of matter only, and of force and motion but

incidentally. These, however, are equally essential components of the phenomena of the universe. What is force? In the last analysis it is the unknown cause which we assume for motion, or the term in which we sum up whatever produces or tends to produce it. The idea of force, like so many other of our ideas, is taken from our own sensations. If we lift a weight or bend a bow, we are conscious of doing so by an effort. Something which we call will produces a motion in the molecules of the brain, which is transmitted by the nerves to the muscles, where it liberates a certain amount of energy stored up by the chemical composition and decomposition of the atoms of food which we consume. This contracts the muscle, and the force of its contraction, transmitted by a system of pulleys and levers to the hand, lifts the weight. If we let go the weight it falls, and the force which lifted it reappears in the force with which it strikes the ground. If we do not let go the weight but place it on a support at the height to which we have raised it, it does not fall, no motion ensues, but the lifting force remains stored-up in a tendency to motion, and can be made to reappear as motion at any time by withdrawing the support, when the weight will fall. It is evident, therefore, that force may exist in two forms, either as actually causing motion, or as causing a tendency to motion.

In this generalised form it has been agreed to call it energy, as less liable to be obscured by the ordinary impressions attached to the word force, which are mainly derived from experiences of actual motion cognizable by the senses. We speak, therefore, of energy as of something which is the basis or *primum mobile* of all motion or tendency to motion, whether it be in the grosser forms of gravity and mechanical work, or in the subtler forms of molecular and atomic motions causing the phenomena of heat, light, electricity, magnetism, and chemical action. This energy may exist either in the form of actual motion, when it is called energy of motion, or in that of tendency to motion, when it is called energy of position. Thus the bent bow has energy of position which, when the string is let go, is at once converted into energy of motion in the flight of the arrow.

Respecting this energy modern science has arrived at this grand generalisation,

that it is one and the same in all its different manifestations, and can neither be created nor destroyed, so that all these varied manifestations are mere transformations of the same primitive energy from one form to another. This is what is meant by the principle of the "Conservation of Energy."

It was arrived at in this way. Speaking roughly, it has long been known that heat could generate mechanical power, as seen in the steam-engine; and conversely that mechanical power could generate heat, as is seen when a sailor, in a chill north-easter, claps his arms together on his breast to warm himself. But it was reserved for Dr. Joule to give this fact the scientific precision of a natural law, by actually measuring the amount of heat that was added to a given weight of water by a given expenditure of mechanical power, and conversely the amount of mechanical work that could be got from a given expenditure of heat.

A vast number of carefully-conducted experiments have led to the conclusion that if a kilogramme be allowed to fall through 424 metres and its motion be then suddenly stopped, sufficient heat will be generated to raise the temperature of one kilogramme of water by 1° Centigrade; and conversely this amount of heat would be sufficient to raise one kilogramme to a height of 424 metres.

If, therefore, we take as our unit of work that of raising one kilogramme one metre, and as our unit of heat that necessary to raise one kilogramme of water 1° Centigrade, we may express the proportion of heat to work by saying that one unit of heat is equal to 424 units of work; or, as it is sometimes expressed, that the number 424 is the mechanical equivalent of heat.

But the question may be asked, what does this mean, how can mechanical work be really transformed into heat or *vice versa*? The answer is, the energy which was supplied by chemical action to the muscles of the man or horse, or to the water converted into steam by combustion of coal, which originated the mechanical work, was first transformed into its equivalent amount of mechanical energy of motion, and then, when that motion was arrested, was transformed into heat, which is simply the same energy transformed into increased molecular motion.

If we wish to carry our inquiry a step further back and ask where the original energy came from which has undergone these transformations, the answer must be, mainly from the sun. The sun's rays, acting on the chlorophyl or green matter of the plants of the coal era, tore asunder the atoms of carbon and oxygen which formed the carbonic acid in the atmosphere, and locked up a store of energy in the form of carbon in the coal which is burned to produce the steam. In like manner it stored-up the energy in the form of carbon in the vegetable products which, either directly, or indirectly after having passed through the body of some animal, supplied the food, whose slow combustion in the man or horse supplied the energy which did the work.

But where did the energy come from which the sun has been pouring forth for countless ages in the form of light and heat, and of which our earth only intercepts the minutest portion? This is a mystery not yet completely solved, but one real cause we can see, which has certainly operated and perhaps been the only one, viz., the mechanical energy of the condensation by gravity of the atoms which originally formed the nebulous matter out of which the sun was made. If we ask, how came the atoms into existence endowed with this marvellous energy, we have reached the furthest bounds of human knowledge, and can only reply in the words of the poet: "Behind the veil, behind the veil."

We can only form metaphysical conceptions, or I might rather call them the vaguest guesses. One is, that they were created and endowed with their elementary properties by an all-wise and all-powerful Creator. This is Theism.

Another, that thought is the only reality, and that all the phenomena of the universe are thoughts or ideas of one universal, all-pervading Mind. This is Pantheism.

Or again, we may frankly acknowledge that the real essence and origin of things are "behind the veil," and not knowable or even conceivable by any faculties with which the human mind is endowed in its present state of existence. This is Agnosticism.

There is another conception, of which we may certainly say that it is not tenable—that is Atheism. For it is the spirit that denies without warrant for

denial, and pronounces a verdict which is arrived at without evidence.

But these speculations lead us into the misty regions where, like Milton's fallen angels, "we find no end in wandering mazes lost." Let us return to the solid ground of fact, on which alone the human mind can stand firmly, and, like Antæus, gather fresh vigour every time it touches it for further efforts to enlarge the boundaries of knowledge and extend the domain of Cosmos over Chaos.

The transformation of energy which we have seen to exist in the case of mechanical work and heat, is not confined to those two cases only, but is a universal law applicable to all actions and arrangements of matter which involve motions of atoms, molecules, or masses, and therefore imply the existence of energy. In heat we have had an example of energy exerted in molecular motion and molecular separation. In chemical action we have energy exerted in the separation of atoms, severing them from old combinations and mutual attractions, and bringing them within the sphere of new ones. In electricity, and magnetism, which is another form of electricity, we have energy of position which manifests itself in electrical separation, by which matter becomes charged with two opposite energies, positive and negative, which accumulate at separate poles, or on separate surfaces, with an amount of tension which may be reconverted into the original amount of energy of motion when the spark, passing between them, restores their electrical equilibrium. Of this we have an example in the ordinary electrical machine, where the original energy comes from the mechanical force which turns the handle, and is given back when the electric spark brings things back to their original state.

We have also energy of motion, when instead of electrical separation and tension we have a flow or current of electricity producing the effect of the electric spark in a slow, quiet, and continuous manner. Thus, in the voltaic battery, the free energy created by the difference of chemical action of an acid on plates of different metals, is transformed into a current which charges two poles with opposite electricities, and when the poles are brought together and the circuit is closed, flows through it in

a continuous current. This current is an energetic agent which produces various effects. It deflects the magnetic needle, as is seen in the electric telegraph. It creates magnetism, as is seen when the poles of the battery are connected by a wire wrapped round and round a cylinder of soft iron, so as to make the current circulate at right angles to the axis formed by the cylinder. In fact, all magnetism may be considered as the summing up at the two opposite extremities or poles of an axis, of the effects of electric currents circulating round it; as, for instance, the earth is a great magnet because currents caused by the action of the sun circulate round it nearly parallel to the equator. Electric currents further show their energy by attracting and repelling one another, those flowing in the same direction attracting, and those in opposite directions repelling, the same effect showing itself in magnets, which are in substance collections of circular currents flowing from right to left or left to right according as they are positive or negative. Again, currents produce an effect by inducing currents in other bodies placed near them, very much as the vibrations of a tuning-fork induce vibrations and bring out a corresponding note from the strings of a piano or violin ready to sound it. When a coil of wire is connected with a battery and a current passes through it, if it is brought near to another isolated coil it induces a current in an opposite direction, which, when it recedes from it, is changed into a current in the same direction.

These principles are illustrated by the ordinary dynamo, by which the energy of mechanical work exerted in making magnets revolve in presence of currents, and by various devices accumulating electric energy, is made available either for doing other mechanical work, such as driving a wheel, or for doing molecular or atomic work by producing heat and light.

Another transformation of the energy of electric currents is into heat, light, or chemical action. If the two poles of a battery are connected by a thin platinum wire it will be heated to redness in a few seconds, the friction or resistance to the current in passing through the limited section of the thin wire producing great heat. If the wire is thicker heat

will equally be produced, but more slowly.

If the poles of the battery are made of carbon, or some substance the particles of which remain solid during intense heat, when they are brought nearly together the current will be completed by an arc of intensely brilliant light, and the carbon will slowly burn away. This is the electric light so commonly used when great illuminating power is wanted.

Again, the electric current may employ its energy in effecting chemical action. If the poles of a battery, instead of being brought together, are plunged into a vessel of water, decomposition will begin. Oxygen will rise in small bubbles at the positive pole, and hydrogen at the negative. If these two gases are collected together in the same vessel, and an electric current, in the intense and momentary form of a spark, passed through them, they will combine with explosion into the exact amount of water which was decomposed in their formation.

Everywhere, therefore, we find the same law of universal application. Energy, like matter, cannot be created or destroyed, but only transformed. It is therefore, in one sense, eternal. But there is another point of view from which this has to be regarded.

Mechanical work, as we have seen, can always be converted into heat, and heat can, under certain conditions, be reconverted into mechanical work; but not under all conditions. The heat must pass from something at a higher temperature into something at a lower. If the condenser of a steam-engine were always at the same temperature as the boiler, we should get no work out of it. It is easy to understand how this is the case if we figure to ourselves a river running down into a lake. If the stream is dammed up at two different levels, each dam, as long as there is water in it, will turn a mill-wheel. But if all the water runs down into the lake and, owing to a dry season, there is no fresh supply, the wheels will stop and we can get no more work done. So with heat, if it all runs down to one uniform temperature it can no longer be made available to do work. In the case of the river, fresh water is supplied at the higher levels, by the sun's energy raising it by evaporation from the seas to

the clouds, from which it is deposited as rain or snow. But in the case of heat there is no such self-restoring process, and the tendency is always towards dissipation; or in other words, towards a more uniform distribution of heat throughout all existing matter. The process is very slow; the original fund of high-temperature heat is enormous, and as long as matter goes on condensing fresh supplies of heat are, so to speak, squeezed out of it.

Still there is a limit to condensation, while there is no limit to the tendency of heat to diffuse itself from hotter to colder matter until all temperatures are equalized. The energy is not destroyed; it is still there in the same average amount of total heat, though no longer differentiated into greater and lesser heats, and therefore no longer available for life, motion, or any other form of transformation. This seems to be the case with the moon, which, being so much smaller, has sooner equalised its heat with surrounding space, and is apparently a burnt-out and dried-up cinder without air or water. And this, as far as we can see, must be the ultimate fate of all planets, suns, and solar systems. Fortunately the process is extremely slow, for even our small earth has enjoyed air, water, sunshine, and all the present conditions necessary for life for the whole geological period, certainly from the Silurian epoch downwards, if not earlier, which cannot well be less than 100 millions of years, and may be much more. Still time, even if reckoned by hundreds of millions of years, is not eternity; and as, looking through the telescope at nebulae which appear to be condensing about central nuclei, we perchance dimly discern a beginning, so, looking at the moon and reasoning from established principles as to the dissipation of heat, we can dimly discern an end. What we really can see is that throughout the whole of this enormous range of space and time law prevails; that, given the original atoms and energies with their original qualities, everything else follows in a regular and inevitable succession; and that the whole material universe is a clock, so perfectly constructed from the beginning as to require no outside interference during the time it has to run to keep it going with absolute correctness.

CHAPTER IV

LIFE.

Origin of Life—Simplest Form, Protoplasm—Monera and Protista—Animal and Vegetable Life—Spontaneous Generation—Development of Species from Primitive Cells—Supernatural Theory—Zoological Provinces—Separate Creations—Law or Miracle—Darwinian Theory—Struggle for Life—Survival of the Fittest—Development and Design—The Hand—Proof required to establish Darwin's Theory as a Law—Species—Hybrids—Man subject to Law.

THE universe is divided into two worlds—the inorganic, or world of dead matter; and the organic, or world of life. What is life? In its essence it is a state of matter in which the particles are in a continued state of flux, and the individual existence depends, not on the same particles remaining in the same definite shape, but on the permanence of a definite mould or form through which fresh particles are continually entering, forming new combinations and passing away. It may assist in forming a conception of this if we imagine ourselves to be looking at a mountain the top of which is enveloped in a driving mist. The mountain is dead matter, the particles of which continue fixed in the rocks. But the cloud-form which envelops it is a mould into which fresh particles of vapour are continually entering and becoming visible on the windward side, and passing away and disappearing to leeward. If we add to this the conception that the particles do not, as in the case of the cloud, simply enter in and pass away without change, but are digested, that is, undergo chemical changes by which they are partly assimilated and worked-up into component parts of the mould, and partly thrown off in new combinations, we shall arrive at something which is not far off the ultimate idea of what constitutes living matter, in its simplest form of the protoplasm, or speck of jelly-like substance, which is shown to be the primitive basis or raw material of all the more complex forms both of vegetable and animal life. Digestion, therefore, is the primary attribute. A crystal grows from *without*, by taking on fresh particles and building them up in regular layers according to fixed laws, just as the pyramids of Egypt

were built up by layer upon layer of squared stones upon surfaces formed of regular figures, and inclined to each other at determinate angles.

The living plant or animal grows from within by taking supplies of fresh matter into its inner laboratory, where it is worked up into a variety of complex products needed for the existence and reproduction of life. After supplying these, the residue is given back in various forms to the inorganic world, and the final residue of all is given back by death, which is the ultimate end of all life.

The simplest form of life, in which it first emerges from the inorganic into the organic world, consists of protoplasm, or, as it has been called, the physical basis of life. Protoplasm is a colourless semi-fluid or jelly-like substance, which consists of albuminoid matter, or in other words, of a heterogeneous carbon-compound of very complex chemical composition. It exists in every living cell, and performs the functions of nutrition and reproduction, as well as of sensation and motion. In its simplest form, that of the microscopic monera or protista, the lowest of living beings, we find an apparently homogeneous structureless piece of protoplasm, without any differentiation of parts. The monera are simple living globules of jelly, without even a nucleus or any sort of organ, and yet they perform all the essential functions of life without any different parts being told off for particular functions. Every particle or molecule is of the same chemical composition and a facsimile of the whole body, as in the case of a crystal. They are, therefore, the first step from the inorganic into the organic world, and if spontaneous generation takes place anywhere, it is in the passage of the chemical elements from the simple and stable combinations of the former into the complex and plastic combinations of the latter.

The next step upwards is to the cell in which the protoplasm is enclosed in a skin or membrane of modified protoplasm, and a nucleus, or denser spot, is developed in the enclosed mass. This is the primary element from which all the more complicated forms of life are built-up. Each cell seems to have an independent life of its own, and a faculty of reproduction by splitting into fresh cells similar to itself, which multiply in geometrical progression, assimilating the elements of their

substance from the inorganic world so rapidly as to provide the requisite raw material for higher structures.

The first organised living forms are extremely minute, and can only be recognised by powerful microscopes. A filtered infusion of hay, allowed to stand for two days, will swarm with living things, a number of which do not exceed $\frac{1}{1000}$ th of an inch in diameter. Minute as these animalcula are, they are thoroughly alive. They dart about and digest; the smallest speck of jelly-like substance shoots out branches or processes to seize food, and if these come in collision with other substances they withdraw them. They exist in countless myriads, and perform a very important part in the economy of nature. They are the scavengers of the universe, and remove the remains of living matter after death, which would otherwise accumulate until they choked-up the earth. This they do by the process of putrefaction, which is due mainly to the multiplication of little rod-like creatures known as bacteria, which work up the once living, now dead, matter into fresh elements, again fitted to play their part in the inorganic and organic worlds.

One of the simplest of these forms is the amoeba, which is nothing but a naked little lump of cell-matter, or plasma, containing a nucleus; and yet this little speck of jelly moves freely, it shoots out tongues or processes and gradually draws itself up to them with a sort of wave-like motion; it eats and grows, and in growing reproduces itself by contracting in the middle and splitting up into two independent amœbæ.

The germs of these various animalcula swarm in the air, and carry seeds of infection wherever they find a soil fitted to receive them; and thus assist the survival of the fittest in the struggle of life, by eliminating weak and unhealthy individuals and species. Thus when the potato, the vine, or the silkworm has had its constitution enfeebled by prolonged artificial culture, there are germs always ready to revenge the violation of natural laws, and bring the survivors back to a more healthy condition. In like manner the germs of cholera, typhoid, and scarlet fever, enforce the observance of sanitary principles.

In this simple form the lowest forms of life are not yet sufficiently differentiated

to enable us to distinguish clearly between animal and vegetable, and they have been called by some naturalists Protista, while



AMCEBA.

AMCEBA dividing into two.

others designate them as Protózoa or Protophyta, according as they show more resemblance to one or the other form of life. But it is often so doubtful that in looking at the same organism through a microscope, Huxley was inclined to consider it as a plant, while Tyndall exclaimed that he could as soon believe that a sheep was a vegetable.

In the next stage upwards, however, life subdivides itself into two great kingdoms, that of the vegetable and of the animal world. Alike in their general definition as contrasted with inorganic matter, and in their common origin from an embryo cell, which divides and subdivides until cell-aggregates are formed, from which the living form is built up by a process of evolution, the plant differs from the animal in this: that the former feeds directly on inorganic matter, while the latter can only feed on it indirectly, after it has been manufactured by the plant into vegetable substance.

This is universally true, for if we dine on beef, we dine practically on the grass which the ox ate; that is, on the carbon, oxygen, hydrogen, and other simple elements which the grass, under the stimulus of light and sunshine, manufactured into complex compounds; and which the ox again, by a second process, manufactured from these compounds into others still more complex, and more easily assimilated by us in the process of digestion. But in no case can we dine, as the plant does, on the simple elements, and thrive on a diet of air and water, with a small admixture of nitrate of ammonia, and of phosphates, sulphates and chlorides, of a few primitive metals. Vegetable life

therefore, is the producer, and animal life the consumer, of the organic world.

Practically the plant derives most of its substance from the carbonic acid gas in the atmosphere, which green leaves under the stimulus of light and heat have the faculty of decomposing, and abstract the carbon giving out the oxygen; while the animal, by a reverse process, burns up the compounds manufactured by the plant, principally out of this carbon, by the oxygen obtained from the air by the process of respiration, exhaling the surplus carbon in the form of carbonic acid gas.

The balancing effect of these two processes may be seen in any aquarium, where animals and vegetables live together in water which is kept pure, while it would become stagnant and poisonous in a few hours, if one of the two forms of life were removed. All that the animal requires therefore for its existence—materials with which to build up its frame and supply waste; heat with which to maintain its circulating fluids and other substances at a proper temperature; motive power or energy to enable it to move, feel, and, in the case of the higher animals, to think—are all proceeds of the slow combustion of materials derived from the vegetable world in the oxygen breathed from the air, just as the work done by a steam-engine is the product of a similar combustion, or chemical combination of the oxygen of the air with the coal shovelled into the fire-box. These distinctions, however, between animals and vegetables are not quite absolute, for, even in the more highly-organised forms of life, there is a border-land where some plants seem to perform the functions of animals, as in those which catch and consume flies and eat and digest pieces of raw meat.

Those who wish to pursue this interesting subject further will do well to read the Chapter on Living Matter in Huxley's "Physiography," where they will find it more fully explained, with the inimitable clearness which characterises all the writings of an author who was at the same time one of the first scientific authorities and one of the greatest masters of English prose. But my present object is not to write a scientific treatise, but shortly to sum up the ascertained results of modern science, with a view to their bearings on modern thought; and from

this point of view the immediate question is, how far unbroken sequence, which has been shown to prevail universally throughout space, time, and inorganic matter, can be shown to prevail equally throughout the world of life.

Up to a certain point this admits of positive proof. It is as certain that all individual life, from the most elementary protoplasm up to the highest organism, Man, originates in a minute or embryo cell, as it is that oxygen and hydrogen combined in certain proportions make water. But if we try to go back one step further, behind the cell, we are stopped. In the inorganic world we can reason our way beyond the microscopic matter to the molecule, and from the molecule to the atom, and are only arrested when we come to the ultimate form of matter, and of energy, out of which the universe is built up. But, in the case of life, we are stopped two steps short of this, and cannot tell how the cell containing the germ of life is built up out of the simpler elements.

Many attempts have been made to bridge over this gulf, and to show how life may originate in chemical compounds, but hitherto without success. Experiments have been made which, for a time, seemed to show that spontaneous generation was a scientific fact, i.e., that the lowest forms of life, such as bacteria and amœbæ, really did originate in infusions containing no germs of life; but they have been met by counter experiments confirming Harvey's dictum, "*Omne vivum ex ovo*," or, all life comes from an egg, i.e., from antecedent germs of life, and the verdict of the best authorities, such as Pasteur, Tyndall, and Huxley is, that spontaneous generation has been "defeated along the whole line." This verdict is perhaps too unqualified, for it appears that, on the assumption with which both sides started, all organic life was destroyed by exposure to a heat of 212°, or the boiling-point of water, the advocates of spontaneous generation had the best of it, as low forms of life did appear in infusions which had been exposed to this heat, and then hermetically sealed, so as to prevent any germs from entering. But it was replied that, as a hard pea takes more boiling than a soft one, it might very well be that heat sufficient to destroy life in any moist organism of sufficient size to be seen by the microscope,

might not destroy the germinating power of ultra-microscopic germs in a very dry state. And this position seems to have been confirmed by various experiments, showing that such ultra-microscopic germs really do exist, and are given forth in the last life stage of the bacteria which cause putrefaction; and that if they are absent or destroyed by repeated applications of heat, infusions will keep sweet for ever in optically pure air.

Above all, the germ theory has received confirmation from the brilliant practical results to which it has led in the hands of Pasteur, enabling him to detect, and to a great extent eradicate, the causes which had led to the oidium of the vine and the pebrine of the silk-worm, thereby saving millions to the industries of France. The germ theory has also led to important results in medical science, and is pointing towards the possibility of combating the most fatal diseases by processes analogous to that by which vaccination has almost freed the human race from the scourge of small-pox.

On the whole, therefore, we must be content to accept a verdict of "Not proven" in the case of spontaneous generation, and admit that as regards the first origin of life, science fails us, and that there is at present no known law that will account for it.

Should spontaneous generation ever be proved to be a fact, it will doubtless be in creating living protoplasm from inorganic elements at its earliest stage, before it has been differentiated even into the primitive form of a nucleated cell or that of an amoeba. This is what the doctrine of evolution would lead us to expect, for it would be in contradiction to it to suppose that the starting-point could be interpolated at any stage subsequent to the lowest. It may be also that this step could only be made under conditions of heat, pressure, and otherwise, which existed in the earlier stage of the earth's existence, but have long since passed away.

This, however, is only a small part of the difficulty we have to encounter in reducing life to law.

These primeval embryo cells, like as they are in appearance, contain within them the germs of an almost infinite diversity of evolutions, each running its separate course distinct from the others.

The world of life is not one and uniform, but consists of a vast variety of different species, from the speck of protoplasm up to the forest tree, and from the humble amoeba up to man, each one, at any rate within long intervals of time, breeding true and keeping to its own separate and peculiar path along the line of evolution.

The first germ, or nucleated cell, of a bacterium develops into other bacteria and nothing else, that of a coral into corals, of an oak into oaks, of an elephant into elephants, of a man into man. In the latter case we can trace the embryo in its various stages of growth through forms having a certain analogy to those of the fish, the reptile, and the lower mammals, until it finally takes that of the human infant. But we have no experience of a fish, a frog, or a dog, born of human parents, or of any of the lower animals ever producing anything resembling a man.

How can this be explained? Naturally the first attempt at explanation was by miracle. At a time when everything was explained by miracle, when all unusual occurrences were attributed to supernatural agency, and men lived in an atmosphere of providential interferences, witchcraft, magic, and all sorts of divine and diabolic agencies, nothing seemed easier than to say that the beasts of the field, the birds of the air, and the fishes of the sea, are all distinct after their kind, because God created them so.

But as the supernatural faded away and disappeared in other departments where it had so long reigned supreme, and science began to classify, arrange, and accumulate facts as they really are, it became more and more difficult, or rather impossible, to accept this simple explanation. The very first step destroyed the validity of all the traditional myths which described the origin of life from one simultaneous act of creation at a single centre. The earth is divided into separate zoological provinces, each with its own peculiar animal and vegetable world. The kangaroo, for instance, is found in Australia and there only. By no possibility could the aboriginal kangaroo have jumped at one bound from Mount Ararat to Australia, leaving no trace of his passage in any intermediate district. This isolation of life in separate provinces applies so rigidly, that we may

sum it up by saying generally that there are no forms of life common to two provinces unless where migration is possible, or has been possible in past geological periods.

In islands at a distance from continents, we find common forms of marine life, for the sea affords a means of communication; and often common forms of bird, insect, and vegetable life, where they may have been wafted by the winds; but forms which neither in the adult nor germ state could swim or fly, or be transported by something which did swim or fly, are invariably wanting. New Zealand affords a most conspicuous instance of this. Here is a large country with a soil and climate exceptionally well adapted to support a large amount of animal life of the higher orders, and yet, with the exception of two species of bats, it had absolutely no mammal before they were introduced by man, the dog being probably introduced by the Maoris. If special creations took place to replenish the earth as soon as any portion of its surface becomes fit to sustain it, why were there no animals in New Zealand? Or, in the Andaman Islands, in the Gulf of Bengal, which are as large as Ireland, covered with luxuriant vegetation, and within 300 miles of the coast of Asia, where similar jungles swarm with elephants, tigers, deer, and all the varied forms of mammalian life, there are no mammalia except a pigmy black savage and a pigmy black pig, the latter probably introduced by man.

The sharpness of the division between zoological provinces is well illustrated by that drawn by the Straits of Lombok, where a channel, not twenty miles wide, separates the fauna of Asia and Australia so completely that there are no species of land animals, and only a few of birds and insects, common to the two sides of a channel not so wide as the Straits of Dover.

There is no possibility of accounting for this, except by supposing that the deep water fissure of the Straits of Lombok has existed from remote geological periods, and barred the migration southwards of those Asiatic animals, which, as long as they found dry land, migrated northwards and westwards till they were stopped by the Polar and Atlantic Oceans. This difficulty of requiring special creations for separate

provinces is enormously enhanced if we look beyond the existing condition of things, and trace back the geological record. We must suppose separate creations for all the separate provinces of the separate successive formations from the Silurian upwards. And the more we investigate the conditions of life either under existing circumstances or in those of past geological epochs, the more are we driven to enormously multiply the number of separate creations which would be necessary to account for the diversity of species. We find life shading off into an infinite variety of almost imperceptible gradations from the highest organism, man, to the lowest, or speck of protoplasm, and we can draw no hard and fast line and say, up to this point life originated by natural processes, and beyond it we must have recourse to miracle. Either all life or none is a product of evolution acting by defined law, and the affirmation of law is the negation of miracle.

Every day brings us an account of some new discovery linking forms of life nearer together and bridging over intervals thought to be impassable. The discovery of insectivorous plants, which also devour and digest pieces of raw meat, has added to the difficulty which has been long felt, particularly in the humbler forms of life, of drawing any clear line of demarcation between the animal and vegetable worlds.

Microscopic research brings to light fresh facts confounding our fixed ideas as to the permanence of particular modes of reproducing life, and showing that the same organism may run through various metamorphoses in the course of its life-cycle, during some of which it may be sexual and in others asexual, i.e., it may reproduce itself alternately by the co-operation of two beings of opposite sex, and by fissure or budding from one being only which is of no sex.

These, and a multitude of other similar facts, complicate enormously the problems of life and its developments, whether we attempt to solve it by calling in aid a perpetual series of innumerable miraculous interpositions, or by appealing to ordinary known laws of Nature.

Is the latter solution possible, and can the organic world be reduced, as the inorganic world has been with all its

MODERN SCIENCE AND MODERN THOUGHT

mysteries and the infinities of space, time, and matter, from chaos into cosmos, and shown to depend on permanent and harmonious laws? Is the world of life, like that of matter, a clock, so perfectly constructed from the first that it goes without winding up or regulating? or is it a clock which would never have started going, or having started would soon cease to go, if the hand of the watch-maker were not constantly interfering with it? This is the question which the celebrated Darwinian theory attempts to answer, of which I now proceed to give a short general outline.

The varieties among domestic animals are obvious to every one. The race-horse is a very different creature from the dray-horse; the short-horned ox from the Guernsey cow; the greyhound from the Skye terrier. How has this come to pass? Evidently by man's intervention, causing long-continued selection in breeding for certain objects. The English race-horse is the product of mating animals distinguished for speed for some fifteen or twenty generations. The greyhound is a similar dog-product by breeding for a longer period with the same object; as the Skye terrier is of selection in order to get a dog which can follow a fox into a cairn of rocks and fight him when he gets there. In all these cases it is evident that the final result was not attained at once, but by taking advantage of small accidental variations and accumulating them from one generation to another by the principle of heredity, which makes offspring reproduce the qualities of their parents.

The most precise and scientific experiments on this power of integrating, or summing up, a progressive series of differentials, or minute differences, between successive generations, are those conducted by Darwin on pigeons. He has shown conclusively that all the races of domestic pigeons, of which there are two or three hundred, are derived from one common ancestor, the wild or blue rock pigeon, and that the pigeon-fancier can always obtain fresh varieties in a few generations by careful interbreeding. Of the existing varieties many now differ widely from one another, both in size, appearance, and even in anatomical structure, so that if they were now discovered for the first time in a fossil state or in a new country, they would

assuredly be classed by naturalists as separate species.

This is the work of man; is there anything similar to it going on in Nature? Yes, says Darwin, there is a tendency in all life, and especially in the lower forms of life, to reproduce itself vastly quicker than the supply of food and the existence of other life can allow, and the balance of existence is only preserved by the wholesale waste of individuals in what may be called the "struggle for life." In this struggle, which goes on incessantly and on the largest scale, the slightest advantage must tell in the long run, and on the average, in selecting the few who are to survive, and such slight advantages must tend to accumulate from one generation to another under the law of heredity. The cumulative power of selection exercised by man in the breeding of races is therefore necessarily exercised in Nature by the struggle for life, and in the course of time, by the cumulation of advantages originally slight, small and fluctuating variations are hardened into large and permanent ones, and new species are formed.

Darwin illustrates this principle of the "struggle for life" with a vast variety of instances, showing how the balance of animal and vegetable life may be preserved or destroyed in the most unexpected manner. For instance, the fertilisation of red clover is effected by humble-bees, and depends on their number; the number of bees in a given district depends mainly on the number of field-mice which destroy their combs and nests; the number of mice depends on the number of cats; and thus the presence or absence of a carnivorous animal may decide the question whether a particular sort of flora shall prevail over others or be extirpated.

The countless profusion with which any one species, unchecked by its natural foes, may multiply in a given district, is illustrated by the potato disease, which in a few days invades whole countries; and by the rabbit plague in Australia and New Zealand, where, in less than twenty years, the descendants of a few imported pairs have rendered whole provinces useless for sheep pasture, and stoats are now being imported to restore the balance of life. The tendency in species to produce varieties which by selection may become exaggerated and fixed, is illus-

trated by the case of the Ancon herd of sheep. A ram lamb was born in Massachusetts in 1791, which had short crooked legs and a long back like a turnspit dog. Being unable to jump over fences like the ordinary sheep, it was thought to possess certain advantages to the farmer, and the breed was established by artificial selection in pairing this ram with its descendants who possessed the same peculiarities. The introduction of the Merino superseded the Ancon by giving a tame sheep not given to jump fences, with a better fleece, and so the breed was not continued, but it is certain that it might have been established as a permanent variety differing from the ordinary sheep as much as the turnspit or Skye terrier differs from the ordinary dog. The tendency of Nature to variation is apparent in the fact that of the many hundred millions of human beings living on the earth, no two are precisely alike, and varieties often appear, as in giants and dwarfs, six-fingered or toed children, hairy and other families, which might doubtless be fixed and perpetuated by artificial or natural selection, until they became strongly marked and permanent.

It is evident that if the theory of development is true it excludes the old theory of design, or rather, it thrusts it back in the organic, as it has been thrust back in the inorganic, world, to the first atoms or origins which were made so perfect as to carry within them all subsequent phenomena by necessary evolution. Design and development lead to the same result, that of producing organs adapted for the work they have to do, but they lead to it in totally different ways. Development works from the less to the more perfect, and from the simpler to the more complicated, by incessant changes, small in themselves, but constantly accumulating in the required direction. Design supposes that organisms were created specially on a predetermined plan, very much as the sewing-machine or self-binding reaper were constructed by their inventors.

Until quite recently all adaptations of means to ends were considered as evidences of design. A series of treatises, for which prizes were left by a late Duke of Bridgewater, was published some thirty years ago, to illustrate this theme. Among these one by Sir Charles Bell on the Hand attracted a good deal of attention. It was

shown what an admirable machine the human hand is for the various purposes for which it is used, and the inference was drawn that it must have been created so by a designer who adapted means to ends in much the same way as is done by a human inventor. But more complete knowledge has dispelled this idea, and shown that the design, if there be any, must be placed very much farther back, and is in fact involved in the primitive germ from which all vertebrate life certainly, and probably all life, animal or vegetable, has been slowly developed.

The human hand is in effect the last stage of a development of the vertebrate type, or type of life in which a series of jointed vertebrae form a backbone, which protects a spinal cord containing the nervous centres, gives points of attachment for the muscles, and forms an axis of support for the looser tissues. Certain of these vertebrae throw out bony spines or rays; at first, by a sort of simple process of vegetable growth, which formed the fins of fishes; then some of these rays dropped off and others coalesced into more complex forms, which made the rudimentary limbs of reptiles; and finally, the continued process of development fashioned them into the more perfect limbs of birds and mammals. In this last stage a vast variety of combinations was developed. Sometimes the bones of the extremities spread out, so as to form long fingers supporting the feathered wings of birds and the membranous wings of bats; sometimes they coalesced into the solid limbs supporting the bodies of large animals, as in the case of the horse; and finally, at the end of the series, they formed that marvellous instrument, the hand, as it appears in the allied genera of monkeys, apes, and man.

Any theory of secondary design and special miraculous creation must evidently account for all the intermediate forms as well as for the final result. We must suppose not one but many thousands of special creations, at a vast variety of places and over a vast extent of time; we must take into account not the successes only, but the failures, where organs appear in a rudimentary form which are perfectly useless, or in some cases even injurious, to the creature in which they are found. For instance, in the case of the so-called wingless birds,

like the dodo of the Mauritius, and the apteryx of New Zealand, which were found in oceanic islands, evolution accounts readily for the atrophy or want of development of organs which were not wanted where the birds had no natural enemies and found their food on the ground; but why should they have been created with rudimentary wings, useless while they remained isolated, and insufficient to prevent their extermination as soon as man, or any other natural enemy, reached the islands where they had lived secure?

If we are apt to adopt the theory of design and special creation, we must be prepared to take Burns's poetical fancy as a scientific truth, and believe that Nature had to try its "prentice hand," and grope its way through repeated trials and failures from the less to the more perfect. Again, the theory of special creation must account not only for the higher organs and forms of life, but for the lower forms also. Are the bacteria, amoebae, and other forms of life which the microscope shows in a drop of water all instances of a miraculous creation? And still more hard to believe, is this the origin of the whole parasitic world of life which is attached to and infests each its own peculiar form of higher life? Is the human tape-worm a product of design, or that wonderful parasite the trichina, which oscillates between man and the pig, being capable of being born only in the muscles of the one, and of living only in the intestines of the other?

These are the sort of difficulties which have led the scientific world, I may say universally, to abandon the idea of separate special creations, and to substitute for it that which has been proved to be true of the whole inorganic world of stars, suns, planets, and all forms of matter; the idea of an original creation (whatever creation may mean and behind which we cannot go) of ultimate atoms or germs, so perfect that they carried within them all the phenomena of the universe by a necessary process of evolution.

This is the idea to which the Darwinian theory leads up, by showing natural causes in operation which must inevitably tend to originate and to accumulate slight varieties, until they become large in amount and permanent, thus developing new races within old species, new species within old families, new families

within old types, and new and complex types from old and simple ones.

The theory is up to a certain point undoubtedly true, and beyond that point in the highest degree probable, but scientific caution obliges us to add that it is still to a considerable extent a "theory," and not a "law." That is, it is not like the law of gravity, a demonstrated certainty throughout the whole universe, but a provisional law which accounts for a great number of undoubted facts, and supplies a framework into which all other similar facts, as at present ascertained, appear to fit with a probability not approached by any other theory, and which is enhanced by every fresh discovery made, and by the analogy of what we know to be the laws which regulate the whole inorganic world.

To enable us to talk of the "Darwinian law," and not of the "Darwinian theory," we require two demonstrations:

1. That living matter really can originate from inorganic matter.
2. That new species really can be formed from previously existing species.

As regards the first, we have seen that the efforts of science have hitherto failed to produce an instance of spontaneous generation, and all we can say is that it is probable that such instances have occurred in earlier ages of our planet, under conditions of light, heat, chemical action, and electricity, different from anything we can now reproduce in our laboratories. This, however, falls short of demonstration and for the present we must be content to leave the origin of life as one of the mysteries not yet brought within the domain of law.

As regards the second point, we are farther advanced towards the possibility of proof. But here also we are met by two difficulties. If we appeal to historical evidence, we are met by the fact, that a much greater time than is embraced by any historical record is almost necessarily required for the dying out of any old species and introduction of any new one, by natural selection. And if we appeal to fossil remains we are met by the imperfection of the geological record. As to this, it must be remembered that only a very small portion of the earth's surface has been explored, and of this a very small portion consists of ancient land surfaces or fresh water formations, where alone we can expect to meet with traces

of the higher forms of animal life. And even these have been so imperfectly explored, that where we now meet with thousands and tens of thousands of undoubted human remains in the shape of rudely-fashioned stone tools and weapons lying almost under our feet, it is only within the last thirty years that their existence has even been suspected. Cuvier, the greatest authority of the last generation, laid it down as an incontrovertible fact that neither men nor monkeys had existed in the fossil state, or in anything more ancient than the most superficial and recent deposits. We have now at least twenty specimens of fossil monkeys, from one locality alone of the Miocene period, that of Pikermi, near Athens, and many thousands of human remains, contemporary with extinct animals of the Quaternary period, if not earlier. We must be content, therefore, with approximate solutions pointing up to but not absolutely demonstrating the truth.

What is a species? Speaking generally it is an assemblage of individuals who maintain a separate family type by breeding freely among themselves, and refusing to breed with other species. There can be no doubt that this represents what, at the first view and for a limited range of time, is in accordance with actual facts. The animal and vegetable worlds are practically mapped-out into distinct species, and do not present the mass of confusion which would result from indiscriminate cross-breeding. It is clear also that this state of things has lasted for a considerable time, for the paintings on Egyptian tombs and monuments carry us back more than 4,000 years, and show us the most strongly marked varieties of the human race, such as the Semitic, the Egyptian, and the Negro, existing just as they do at the present day. They show us also such extreme varieties of the dog species as the greyhound and the turnspit, then in existence; and the skeletons of animals such as the ox, cat, and crocodile, which have been preserved as mummies, show no appreciable difference from those of their modern descendants.

When we come to look closely, however, into the matter, our faith in this absolute rule of the entire independence of species is greatly modified. In the lower grades of life we see everywhere species shading off into one another by insensible gradations,

and every extension of our knowledge, both of the existing animal, vegetable, and microscopic worlds, and of those of past geological periods, multiplies instances of intermediate forms, differing from one another far less than do many of the individual varieties of recognised species. In the case of sponges, for instance, the latest conclusion of scientific research is this: that if you rely on minute distinctions as constituting distinct species, there are at least 300 species of one family of sponges, while if you disregard slight differences, which graduate into one another, and are found partly in one and partly in another variety, you must designate them all as forming only one species. Even in higher grades, as species are multiplied, it becomes more and more difficult to say where one ends and the other begins. Take the familiar instance of the grouse and ptarmigan. The red grouse is believed to be peculiar to the British Islands, while the ptarmigan is a very widely spread inhabitant of Arctic regions and high mountains. Which is more probable—that the grouse was specially created in the British Islands, apparently for the final cause of bringing sessions of Parliament to wind-up business in August, or that, as the rigour of the Glacial period abated, and heather began to grow, certain ptarmigan by degrees modified their habits and took to feeding on heather tops instead of lichens, and by so doing gradually became larger birds and assumed the colour best adapted for protection in their new habitation? In point of fact, grouse showing traces of this descent in smaller size and much whiter plumage are still to be met with. It would be easy to multiply instances, but this consideration seems conclusive.

If we reject the Darwinian theory and adopt that of independent species descended from a specially created ancestor or pair of ancestors, we are driven by each discovery of intermediate or slightly modified forms, into the assumption of more and more special acts of creation, until the number breaks down under its own weight, and belief becomes impossible.

For instance, in the Madeira Islands alone, 134 species of air-breathing land snails have been discovered by naturalists, of which twenty-one only are found in Africa or Europe, and 113 are peculiar to

this small group of islands, where they are mostly confined to narrow districts and single valleys. Are we to suppose that each of these 113 species was separately created? Is it not almost certain that they are the modified descendants of the twenty-one species which had found their way there in a former geological period, when Madeira was united to Africa and Spain?

There remains only the argument from the fertility of species *inter se* and their refusal to breed with other species. This also, when closely examined, appears to be a *prima facie* deduction, rather than an absolute law. Different species do, in fact, often breed together, as is seen in the familiar instance of the horse and ass. It is true that in this case the mule is sterile and no new race is established. But this rule is not universal, and quite recently one new hybrid race, that of the leporine, or hare-rabbit, has been created, which is perfectly fertile. The progeny of dog and wolf has also been proved to be perfectly fertile during the four generations for which the experiment was continued. In the case of cultivated plants and domestic animals, there can be little doubt that new races, which breed true and are perfectly fertile, have been created within recent times from distinct wild species. The Esquimaux dog is so like the Arctic wolf that there can be little doubt he is either a direct descendant, or that both are descendants from a common stock. The same is true of the jackal and some breeds of dogs in the East and Africa, and other races of dogs are closely akin to foxes. But all dogs breed freely together, and can with difficulty be mated with the wild species which they so closely resemble. The modern Swiss cattle are pronounced by Rüttimeyer to show undoubted marks of descent from three distinct species of fossil oxen, the *Bos primigenius*, *Bos longifrons* and *Bos frontosus*.

There is now¹ in the Zoological Gardens, in Regent's Park, a hybrid cow, whose sire was an American bison and its mother a hybrid between a zebu and a gaur. This animal is perfectly fertile, and has bred again to the bison; but what is singular is, that this hybrid resembles much more an ordinary domes-

tic English cow than it does any of its progenitors. It is totally unlike the bison, both in appearance and disposition, and except in having a projecting ridge over the withers, it might be mistaken for a coarse, bony, common cow. If a hybrid bull had been born of the same type, and mated with this hybrid cow, there is little doubt that a new race might have been established, extremely different from its ancestors.

In fact, nearly all the domesticated animals have the essential characters of new races. We cannot point to wild progenitors existing in any part of the world from which they are descended, and when they run wild they do not revert to any common ancestral form.

In the vegetable world instances of fertile hybrids are still more abundant, and the introduction and establishment of new varieties is a matter of very-day occurrence.

Now, whatever artificial selection can do in a short time, natural selection can certainly do in a longer time, and nothing short of absolute proof of the impossibility of species coming into existence by natural laws should induce us to fall back on the supernatural theory, with all its enormous difficulties of an innumerable multitude of special creations, most of them obviously imperfect and tentative—or rather, useless and senseless on any supposition except that of a necessary and progressive evolution. In fact, if it were not for its bearing on the nature and origin of man, few would be found to maintain the theory of miraculous creations, or to doubt that the world of life is regulated by fixed laws as well as the world of matter. But whatever touches man touches us closely, and brings into play a host of cherished aspirations and beliefs, which are too powerful to be displaced readily by calm, scientific reasoning. Shall man, who, we are told, was created in God's image and only "a little lower than the angels," be degraded into relationship with the brutes, and shown to be only the last development of an animal type which, in the case of apes and monkeys, approaches singularly near to him in physical structure? Are the saints and heroes whom we revere, and the beautiful women whom we admire, descended, not from an all-glorious Adam and all-lovely Eve, as

portrayed in Milton's "Paradise Lost," but from Palæolithic savages, more rude and bestial than the lowest tribe of Bushmen or Australians? Is the account of man's creation and fall in the Hebrew Scriptures as pure a myth as that of Noah's ark, or of Deucalion and Pyrrha?

The only answer to these questions is that truth is truth, and fact is fact, and that it is always better to act and to believe in conformity with truth and fact, than to indulge in illusions. There are many things in Nature which jar on our feelings and seem harsh and disagreeable, but yet are hard facts, which we have to recognise and make the best of. Childhood does not pass into manhood without exchanging much that is innocent and attractive for much that is stern and prosaic. Death, with its prodigal waste of immature life, its sudden extinction of mature life in the plenitude of its powers, its heart-rending separations from loved objects, is a most disagreeable fact. But it would not improve matters to keep grown-up lads in nurseries for fear of their meeting with accidents, or of becoming hardened by contact with the world. Progress, not happiness, is the law of the world; and to improve himself and others by constant struggles upwards is the true destiny of man.

In working out this destiny the fearless recognition of truth is essential. Facts are the spokes of the ladder by which we climb from earth to heaven, and any individual, nation, or religion, which, from laziness or prejudice, refuses to recognise fresh facts, has ceased to climb and will end by falling asleep and dropping to a lower level.

"Prove everything, hold fast that which is true," is the maxim which has raised mankind from savagery to civilisation, and which we must be prepared to act upon at all hazards and at all sacrifices, if we wish to retain that civilisation unimpaired and to extend it further.

CHAPTER V

ANTIQUITY OF MAN

Belief in Man's Recent Origin—Boucher de Perthes' Discoveries—Confirmed by Prestwich—Nature of Implements—Celts, Scrapers, and Flakes—Human Remains in River Drifts—Great Antiquity—Implements from Drift at Bournemouth—Bone Caves—Kent's Cavern—Victoria, Creswell, and other Caves—Caves of France and Belgium—Ages of Cave Bear, Mammoth, and Reindeer—Artistic Race—Drawings of Mammoth, etc.—Human Types—Neanderthal—Attempts to fix Dates—History—Spy, Trilim—Bronze Age—Neolithic—Danish Kitchen-middens—Swiss Lake Dwellings—Glacial Period—Traces of Ice—Causes of Glaciers—Croll's Theory—Gulf Stream—Dates of Glacial Period—Rise and Submergence of Land—Tertiary Man—Eocene Period—Miocene—Evidence for Pliocene and Miocene Man—Conclusions as to Antiquity.

GREAT as the effect has been of the wonderful discoveries of modern science of which I have attempted to give a general view in the preceding chapters, there remains one which has had the greatest effect of all in changing the whole current of modern thought, viz., the discovery of the enormous antiquity of man upon earth, and his slow progress upwards from the rudest savagery to intelligence, morality, and civilisation. It is needless to point out in what flagrant and direct opposition this stands to the theory that man is of recent miraculous creation, and that he was originally endowed with a glorious nature and high faculties, which were partially forfeited by an act of disobedience. It is important, therefore, to understand clearly the evidence upon which rests a conclusion so startling and unexpected as that which traces the origin of man back into the remote periods of geological time.

It had been long known that a stone period preceded the use of metals. Flint arrow-heads, stone axes, knives, and chisels, rude pottery, and other human remains lie scattered almost everywhere, on or near the existing surface, and are found in the sepulchral mounds and monuments which abound in all countries until they are destroyed by the pro-

gress of agriculture. These are certainly ancient, for their origin was so completely forgotten that the stone hatchets or celts (from the Latin *celtis*, or chisel) were universally believed to be thunderbolts which had fallen from heaven. But there was no proof that they were very ancient, they were always found at or near the present surface, and if animal remains were associated with them, they were those of the dog, ox, sheep, red deer, and other wild and domestic species now found in the same district. Historical record was not supposed to extend beyond the 4,000 or 5,000 years assigned to it by Bible chronology, and it was thought that this might be sufficient to account for all the changes which had occurred since man first became an inhabitant of the earth. Above all, the negative evidence was relied on, that geologists had explored far and wide, and although they had found fossil remains which enabled them to restore the characteristic fauna of so many different formations, they had found no trace of man or his works anywhere below the present surface. This seemed so conclusive that Cuvier, the greatest authority of the day, pronounced an emphatic verdict that man had not existed contemporaneously with any of the extinct animals, and probably not for more than 5,000 or 6,000 years. Here, then, appeared to be an edifice based on scientific fact, in which geologists and theologians could dwell together comfortably, and the weight of their united authority was sufficient to silence all objections, and ignore or explain away the instances which occasionally cropped up, of human remains found in situations implying greater antiquity.

Suddenly, I may almost say in a single day, this edifice collapsed like a house of cards, and the fact became apparent that the duration of human life on the earth must be measured by periods of tens, if not of hundreds of thousands of years.

It happened thus: A retired French physician, Monsieur Boucher de Perthes, residing at Abbeville, in the valley of the Somme, had a hobby for antiquarianism as decided as that of Monkbarns himself. Abbeville afforded him a capital collecting-ground for the indulgence of his tastes, as the sluggish Somme flows through a series of peat mosses, which are extensively worked

for fuel, and afford many remains of the Gallo-Roman and pre-Roman or Celtic period. Higher up, on the slopes of the low hills which bound the wide valley, are numerous beds of gravel, sand, and brick-earth, which are also extensively worked for road and building materials. In these pits remains of the mammoth, rhinoceros, and other extinct animals are frequently found, and the workmen had noticed occasionally certain curiously-shaped flints, to which they gave the name of "langues du chat," or cats' tongues. Some of these were taken to Monsieur Boucher de Perthes as curiosities for his museum, and he at once recognised them as showing marks of human workmanship. This put him on the track, and in the year 1841 he himself discovered, *in situ*, in a seam of sand containing remains of the mammoth, a flint rudely but unmistakably fashioned by human hands into a cutting instrument. During the next few years a large quantity of gravel was removed to form the Champ de Mars at Abbeville, and many of these celts or hatchets were found. In 1847, M. Boucher de Perthes published his "Antiquités Celtiques et Ant'diluviennes," giving an account of these discoveries, but no one would listen to him. The united authority of theologians and geologists opposed an infallible veto on the reception of such ideas, and it must be admitted that M. Boucher de Perthes himself did his best to discredit his own discoveries by associating them with visionary speculations about successive deluges and creations of pre-Adamite men. At length Dr. Falconer, the well-known paleontologist, who had brought to light so many wonderful fossil remains from the Sewalik hills in India, happened to be passing through Abbeville and visited M. Boucher de Perthes' collection. He was so much struck by what he saw that on arriving in London he spoke to Mr. Prestwich, the first living authority on the Tertiary and Quaternary strata, and Mr. (now Sir John) Evans, whose authority was equally great on everything relating to the stone implements found in such numbers in the more recent or Neolithic period. He urged them to go to Abbeville and examine for themselves whether there was anything in these alleged discoveries. They did so, and the result was that on their

return to England Mr. Prestwich read a paper to the Royal Society on the 19th May, 1859, which conclusively and for ever established the fact that flint implements of unmistakable human workmanship had been found, associated with the remains of extinct species, in beds of the Quaternary period deposited at a time when the Somme ran at a level more than 100 feet higher than at present, and

have been found from Western Europe to Tibet; in Africa, and Central Australia; in fact wherever they have been looked for, except in northern countries which were buried under ice during the Glacial period. The earliest known authentic witness to man's presence in Britain are some rudely-worked flints which were found, mingled with bones of huge extinct animals, at a great depth in brick-earth at



FLINT HATCH,
From Moulin Quignon, Abbeville.
(Half the actual size.)



FLINT HATCH,
From St. Ascheul, Valley of the Somme.
(Half the actual size.)

(From Lubbock's "Prehistoric Times.")

was only beginning to excavate its valley.

The spell once broken, evidence poured in from all quarters, and although twenty-five years¹ only have elapsed since Mr. Prestwich's paper was read, the number of stone and other implements worked by man, deposited in museums, is already counted by tens of thousands, and they

Hoxne, in Suffolk. Some idea of the immense number of these rude implements may be formed from the fact that the valley system of one small river, the Little Ouse, which rises near Thetford and flows into the Wash after a course of twenty-five miles, has within little more than ten years yielded about 7,000 specimens.

They have been found in great abundance also in the valley gravels of the

¹ Written in 1884.

Thames, Ouse, Wiltshire Avon, and in fact in all the river-gravels and brick-earths of the south and south-east of England; and in those of the Somme,



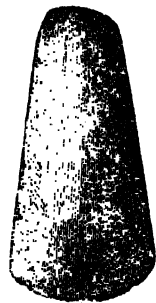
FLINT HACHE,
From Hache.

(Half the actual size.)
From Lubbock's "Prehistoric Times."

Oise, Seine, Loire, and all the principal riversystems of France; and only in less numbers, probably because they have been less looked-for, in similar situations over an area extending from Central and Southern Europe to the Far East. It is a remarkable fact about these river-drift implements that they are all nearly of the same type and found under similar circumstances, that is to say, in the gravels, sands, brick-earths, and fine silt or loess deposited by rivers which have either ceased to run, or which ran at levels higher than their present ones and were only beginning to excavate their present valleys. Also they are always found in association with remains of what is known

as the Quaternary (as distinguished from recent or existing fauna) represented by the mammoth or woolly-haired elephant, the thick-nosed rhinoceros, and other well-known types of extinct animals. The general character of these implements is very rude, implying a social condition at least as low as that of the Australian savages of the present day. They consist mainly of the flake; the chopper, or pebble roughly chipped to an edge on one side; the scraper, used probably for preparing skins; pointed flints used for boring; and by far the most abundant and characteristic of all, the *hache* or celt, a sharp or oval implement, roughly chipped from flint or, in its absence, from any of the hard stones of the district, such as chert or quartzite, and intended to be held in the hand and used without any haft or handle.

These *haches* are evidently the first rude type of human tools from which the later forms of the axe, adze, chisel, wedge, etc., have been derived by a very slow and lengthened process of evolution. They differ, however, in many essential respects, from the more perfect stone celts of later periods and of modern savages. The chipping is very rude, they are never ground or polished, the pointed end is that intended for use, the butt end being left blunt, showing that the *hache* was not hafted but held in the hand; while the converse is always the case with the finely-chipped or polished stone celts and hatchets of the Neolithic period, which, in its later stages, are to all intents and purposes similar to modern implements, only made of stone instead of metal. But these Paleolithic *haches* are only one step in advance of the rude natural stone which an intelligent orang or chimpanzee might pick up to crack a cocoa-nut with, or to grub up a root from the earth, or an insect from a rotten tree.



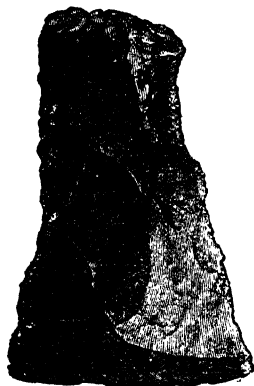
POLISHED STONE AXE.
Neolithic.
(Half the actual size.)
(From Lubbock's
"Prehistoric Times.")

At the same time there is not the re-

ANTIQUITY OF MAN

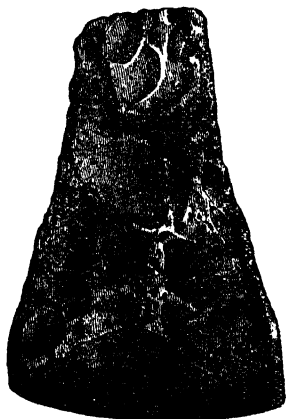
motest doubt as to their being the work of human hands. When placed side by side with the rudest forms of stone hatchets actually used by the Australian and other savages, it is difficult to detect any difference. If placed in an ascending series, from the oldest and rudest, to the finely-finished axes and arrow-heads of the period immediately preceding the use of metal, the progress may be clearly traced by insensible gradations. The blows given to bring the block to the desired shape by intentional chipping have left distinct marks; and archaeologists have succeeded, with a little practice, in fashioning similar implements from modern flints. In

river drifts, since they have been formed under conditions where the preservation of such remains would be very unlikely. In fact, as Sir John Lubbock (now Lord Avebury) points out, the bones found in the river-gravels are almost invariably those of animals larger than man, such as the mammoth and rhinoceros. Still a few human bones have been found, sufficient to show that these river-drift men were probably a dolichocephalic or long and narrow-headed race, with prominent jaws, massive bones, and great muscular strength, but still, although rude and savage, of an essentially human type, and going a very little way towards bridg-



FLINT ADZE,
From Danish Kitchen-middens.

(From Lubbock's "Prehistoric Times.")



MODERN STONE ADZE,
New Zealand.

fact, forgeries have been made by workmen in localities where collectors were eager and credulous, though fortunately such forgeries are easily distinguished from genuine antiquities by the different appearance of the old and recent fractures, and other signs which make it almost impossible to deceive an experienced eye. The conclusion, therefore, of one of our best archaeologists may be safely accepted, that it is as impossible to doubt that these rude stone flakes and hatchets are works of human art, as it would be if we had found clasp-knives and carpenters' adzes.

The remains of human skeletons are, as might be expected, very rare in these

ing over the gap between the savage and the ape.

A more complete view, however, of the conditions of human life at these remote periods is afforded by the evidence given by caves, where naturally the remains of man are more abundant and much better preserved. Before entering, however, on the examination of this class of evidence, it may be well to give an instance which may help to familiarise the imagination with the vast periods of time which must have elapsed since Palæolithic man left these rude implements within reach of river floods.

Among the gravels in which Palæolithic *haches* have been found, are some which



PALÆOLITHIC.
Mammoth Period.



PALÆOLITHIC.
Mammoth Period.



PALÆOLITHIC.
Mammoth Period.



PALÆOLITHIC.
Reindeer Period.



EARLY NEOLITHIC.
From Lubbock's "Prehistoric Times.")



LATE NEOLITHIC.



cap the cliff at Bournemouth at a height of about 130 feet above the sea. This gravel can be traced in a gradual fall from west to east, along the Hampshire coast and the shores of the Solent to beyond Spithead, and was evidently deposited by a river which carried the drainage of the Dorsetshire and Hampshire downs into the sea to the eastward, and of which the present Avon, Test, and Itchen were tributaries. But for such a river to run in such a course the whole of Poole and Christchurch bays must have been dry land, and the range of chalk downs now broken through at the Needles must have been continuous. To borrow the words of Evans in his "Ancient Stone Implements," "Who, standing on the edge of the lofty cliff at Bournemouth, and gazing over the wide expanse of waters between the present shore and a line connecting the Needles on the one hand and the Ballard Down Foreland on the other, can fully comprehend how immensely remote was the epoch when what is now that vast bay was high and dry land, and a long range of chalk downs, 600 feet above the sea, bounded the horizon on the south? And yet this must have been the sight that met the eyes of those primeval men who frequented the banks of that ancient river which buried their handiworks in gravels that now cap the cliffs, and of the course of which so strange but indubitable a memorial subsists in what has now become the Solent Sea."

Any attempt to assign a more precise date than the vague one of immense antiquity to these early traces of primeval man, had better be postponed until we have examined the more detailed and extensive body of evidence which has been afforded by the exploration of caves, to which the great discovery at Abbeville at once gave an immense impulse, and which has since been prosecuted in England, France, Belgium, and Germany, with the greatest ardour and success.

The caves in which fossil remains are found occur principally in limestone districts. They are due to the property which water possesses, when charged with a small quantity of carbonic acid, of dissolving lime. Rain falling on the earth's surface takes up carbonic acid from contact with vegetable matter, and a portion of it finds its way through cracks and crevices in the subjacent rock

to lower levels, where it comes out in springs of hard water charged with carbonate of lime from the rock which it has dissolved. It has been calculated that the average rainfall on a square mile of chalk thus carries away about 140 tons of solid matter in a year. In this way underground channels are formed, some of which become large enough to admit of streams flowing through them, and even rivers, as is seen in the limestone district of Carinthia, where considerable rivers are swallowed up and run for miles beneath the surface. In this way caverns are formed, or sometimes a series of caverns, which represent the pools of the rivers which formerly flowed through them. Accumulations of whatever may have been brought down by the stream were formed at the bottom of these pools, and when, owing to changes in level or denudation of the gathering grounds, the rivers ceased to flow in the old channel, the pools became dry and were converted into caves, in which wild beasts and man found shelter and left their remains. The debris thus formed accumulated with a mixture of blocks which fell from the roof, and of red loamy earth consisting of the residue of the limestone rock insoluble in water, and of dust and mud brought in by winds and floods, and occasionally interstratified by beds of stalagmite, composed of thin films of crystalline carbonate of lime, deposited drop by drop by drippings through the rock forming the roof of the cave. These drippings form what are called stalactites, which hang like pendent icicles from the roof of caves, and as the drip falls from these it forms a corresponding deposit, known as stalagmite, on the floor below. The formation of this deposit is necessarily extremely slow, and it only goes on when the drops of water charged with a minute excess of carbonate of lime come in contact with the air; so that whenever the floor of the cave was under water no stalagmite could be formed. The alternations, therefore, of deposits of stalagmite represent alternations of long periods during which the cave was generally dry or generally flooded. During the dry periods, when the cave happened to be inhabited, the treadings on the floor would prevent the accumulation of an unbroken deposit of pure stalagmite, and the crystalline matter would be employed in forming a solid

cement of the various *débris* into what is known as a breccia.

Another class of caves, or rock-shelters, has been formed along the sides of valleys bounded by cliffs, where the stratification is horizontal or nearly so. But the different beds vary much in hardness and permeability to water. The softer strata weather away more rapidly than the others, and thus form shallow caves or deep recesses in the face of the cliffs, with a floor of hard rock below and a roof of hard rock above, which afford dry and commodious shelters for any sort of animal, including man. In other respects they resemble the first class of caves in having their contents cemented into a breccia by the dripping of water charged with carbonate of lime from the roof, and, if the cave happened to be deserted for a long period, this deposit would in the same way form a bed of stalagmite and seal up securely everything below it. In some cases, also, the roof would fall in, and thus preserve everything previously existing in the cave for the investigation of future geologists.

With these general remarks readers will be able to understand the evidence afforded by the remains of man found in caverns. I will begin by taking as a typical case that of Kent's Cavern, near Torquay, because it is one of the earliest and best known, and all the facts concerning it have been verified by explorations carefully conducted by a committee appointed by the British Association in 1864, which comprised the names of the most eminent authorities in geology and paleontology, including those of Sir Charles Lyell, Sir John Lubbock, Mr. Evans, Mr. Boyd Dawkins, Mr. Pengelly, and others.

The cave is about a mile east from Torquay harbour, and runs into a hill of Devonian limestone in a winding course, expanding into large chambers connected by narrow passages. The following is a series of deposits in descending order in the large chamber near the entrance :

1. Large blocks of limestone which have fallen from the roof.
2. A layer of black, muddy mould, three inches to twelve inches thick.
3. Stalagmite one foot to three feet thick.
4. Red cave-earth with angular fragments of limestone of variable

thickness, but in places five to six feet thick.

In the black earth above the stalagmite were found a number of relics of the Neolithic or polished stone period, with a few articles of bronze and pottery, some of which appear to be of a date as late as that of the Roman occupation of Britain. Associated with these are bones of ox, sheep, goat, pig, and other ordinary forms of existing species, and there is an entire absence of any older fauna, or of any of the ruder forms of Palæolithic implements. When we get below the stalagmite into the underlying cave-earth, the case is entirely reversed. Not a single specimen of polished or finely-wrought stone, or of pottery, is to be found ; a vast number of celts or *haches*, scrapers, knives, hammer stones, and other stone implements, are met with, which are all of the rude Palæolithic type found in river drifts, with a few bone implements such as harpoon-heads, a pin, an awl, and a needle, like those frequently met with in the caves of France and Belgium. Associated with these are a vast number of bones and teeth, all of which belong to the old Quaternary fauna, of which many species have become extinct and others have migrated to distant latitudes.

The following is a list of the mammalian remains which have been found in this cave-earth below the stalagmite :

ABUNDANT.

- The Cave Lion, a large extinct species of lion.
- Cave Hyæna, a large extinct species of hyæna.
- Cave Bear, a large extinct species of bear.
- Grizzly Bear.
- Mammoth (*Elephas primigenius*).
- Rhinoceros (*Tichorhinus*), woolly or thick-nosed extinct species.
- Horse.
- Bison.
- Irish Elk.
- Red Deer.
- Reindeer.

SCARCELY.

- Wolf.
- Fox.
- Glutton.
- Brown Bear.
- Urus.
- Hare.
- Lagomys, tailless Arctic hare.
- Water Vole.
- Field Vole.

**Bank Vole.
Beaver.**

And one specimen of the *Machairodus*, or Great Sabre-toothed Tiger, which is one of the characteristic species of the upper Miocene and Pliocene formations.

These constitute a fauna which is characteristic of the Pleistocene, Quaternary, or Palæolithic period, and essentially different from that of the prehistoric or Neolithic period, which is practically the same as that now existing. Wherever remains of the mammoth, woolly rhinoceros, and cave bear are found, Palæolithic implements may be expected, and conversely. In fact Palæolithic man is as essentially part of the characteristic fauna of the Quaternary period, as the *Palæotherium* is of the Eocene, or the *Deinotherium* and *Hipparion* of the Miocene.

A large number of other caves have been explored in England, notably the Victoria Cave near Settle, in Yorkshire, the Cresswell Caves in Derbyshire, the Gower Caves in South Wales, the Brixham Cave in Devonshire, the Woking Cave in Somersetshire, and King Arthur's Cave in Herefordshire, and the results have been everywhere, practically the same as those at Kent's Cavern. The same class of implements have been found and the same fauna, with the occasional addition of a few species, among which the hippopotamus and *Elephas antiquus* are the most remarkable.

So far as the river drifts and British caves are concerned, all that we could say of the Palæolithic period is that it is of vast antiquity, and must have lasted for an immense time, as it was in force for the whole time requisite for rivers like the Somme or Avon, which drain small areas, to cut down their present valleys, often two or three miles wide, from the level of their upper gravels, which are in many places 100 to 150 feet above the level of the highest floods of the present rivers.

But the caves of France and Belgium supply us with more evidence, and enable us to trace the history of long periods of Palæolithic time, and study in detail the succession of changes that have occurred, and the habits, arts, and industries of the various tribes of primitive men who occupied these caves and rock-shelters at these remote periods. In fact, it may be said with truth that we know more about

the men who chased the mammoth and reindeer in the South of France perhaps 50,000 years ago, than we do about those who lived there immediately before the classical era, or less than 5,000 years ago.

In certain provinces of France and Belgium it happens fortunately that there are extensive districts of limestone, in which caverns and rock-shelters are extremely abundant and full of Palæolithic remains in an excellent state of preservation. The abundance of such caves may be estimated from the fact that the cliffs, bounding one small river, the Vézère, in the department of Dordogne in the South of France, contain in a distance of eight or ten miles no fewer than nine different stations, each of which has given a vast variety of remains embedded in the breccias and cave-earth of their respective floors; and the small river Lesse in Belgium has been scarcely less prolific. Of the abundance of the human and animal remains found in such caverns it may be sufficient to say that one alone, that of Chaleux in the valley of the Lesse, is computed by Dumont to have yielded not less than 40,000 distinct objects.

The great abundance of remains thus collected, both of human bones and implements, and of animals contemporaneous with them, have made it possible to classify and arrange, in relative order of time, a good many of the subdivisions of the Palæolithic period. This has been done partly by the order of superposition and partly by the greater or less rudeness of the implements of stone and bone, and by the greater or less abundance of those animals of the Quaternary fauna which appeared first and disappeared soonest. The result has been to show that the period when vast herds of reindeer roamed over the plains of Southern France up to the Pyrenees was not the earliest, but was preceded by a long period when the reindeer was scarce, and the remains of the mammoth, cave bear, and cave hyæna were more abundant than in the following ages. The implements of this period are of the earlier river-drift type and extremely rude, and there is an almost entire absence of instruments of bone.

Gradually as we pass upwards, the more Southern forms of elephant, rhinoceros, antelopes, and great carnivora disappear, and the mammoth and cave bear

become scarcer, while the reindeer becomes more and more abundant until at length it furnishes the chief source of food, and its horns one of the principal materials for the manufacture of implements. Concurrently with this change we find a progressive improvement in the arts of life, as shown by stone implements more carefully chipped into a greater variety of forms, and arrow and lance-heads, barbed harpoons, awls, and needles for sewing skins, made chiefly from the antlers of the reindeer.

At length we arrive at one of the most interesting facts disclosed by these researches, that during one of the later or reindeer periods of the Paleolithic era, many of the caves in the South of France, and also in Switzerland and Southern Germany, were occupied by a race who, like the Esquimaux of the present day, had a strong artistic tendency, and were constantly drawing with the point of a flint on stone or bone, or modelling with flint knives from horns and bones, sketches of the animals they hunted, scenes of the chase, or other objects which struck their fancy. These are exceedingly well done, so that there is no difficulty in recognising the animals intended to be represented, among which are the mammoth, cave bear, reindeer, wild horse, and wild ox. The sketch of the mammoth which is engraved on a piece of ivory, from the cave of La Madeleine in the valley of the Vézère, is particularly interesting, as it corresponds exactly with the mammoth whose body was found entire in frozen mud on the banks of a river in Siberia, and it sets at rest all possible question of man having been really contemporary with this extinct animal in the South of France.

The drawings and carvings of other animals, especially of the reindeer, are often extremely spirited, and one especially of a reindeer engraved on a bit of bone from a cave at Thayngen, near Schaffhausen in Switzerland, would do credit to any modern animal painter. A very few human figures are found among these primeval drawings, but strangely, while the animals are so well drawn, those of men are very inferior and almost infantine in execution. They are sufficient, however, to show that the naked savage of Périgord, armed with a stone lance or javelin, pursued and slew the formidable aurochs. To these may

be added rock-carvings in Denmark, and figures on limestone cliffs in the Maritime Alps, while if, as some authorities, among them Arthur Evans and Sergi, think, they point to a primitive script, still more important are the characters painted in peroxide of iron on pebbles discovered by Piette in the Mas-d'Azil cave, in the South East of France.

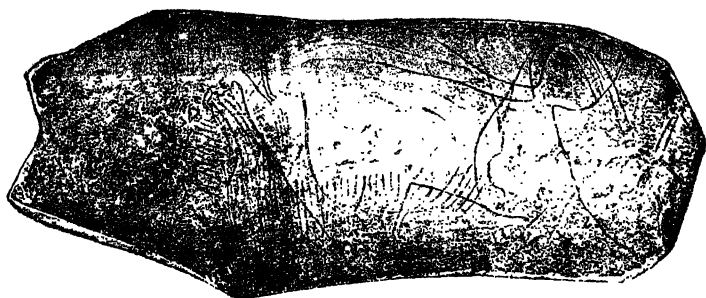
We do not, however, depend on these drawings for evidence of the sort of men who inhabited these caves in Paleolithic days. A large number of skulls and complete skeletons have been found in different caves, some of which have served as sepulchral vaults for families and tribes, while in others individuals have been crushed by falls of rock, or otherwise interred, and in a few cases skulls and bones have been found at great depths in river drifts, and in the loess, or fine glacial mud which fills up the valley of the Rhine and other areas over which the great Swiss glaciers when melting poured their turbid streams.

From among the more important discoveries of remains of man himself, there may be chosen as typical: 1. those from the Spy cavern; 2. from the Neanderthal cavern; and 3. from the pliocene deposits of Trinil, Java.

1. The Betche aux Roches cavern at Spy, Belgium, yielded two nearly complete skeletons of a male and female, associated with a large number of implements of a character somewhat above those of the Drift. The skulls had enormous superciliary (eyebrows) ridges, receding foreheads, massive jaws, and other apelike features to which the general character of the rest of the skeletons approximated. These remains were discovered in 1886.

2. Thirty years earlier there was found in a Quaternary deposit in the Feldhofen cave of the Neander Valley, Rhenish Prussia, a calvaria, or brain-cap, indicating similar features to those of the Spy skulls, and pronounced by Huxley "as the most apelike" yet discovered to that time, although not approaching the assumed special features of the "missing link."

3. More remarkable than either of these specimens are the brain-cap, thigh-bone, and two molar teeth, found in 1891-92 by Dr. Eugène Dubois in the upper pliocene beds at Trinil, on the banks of the river Bengawan, in Java,

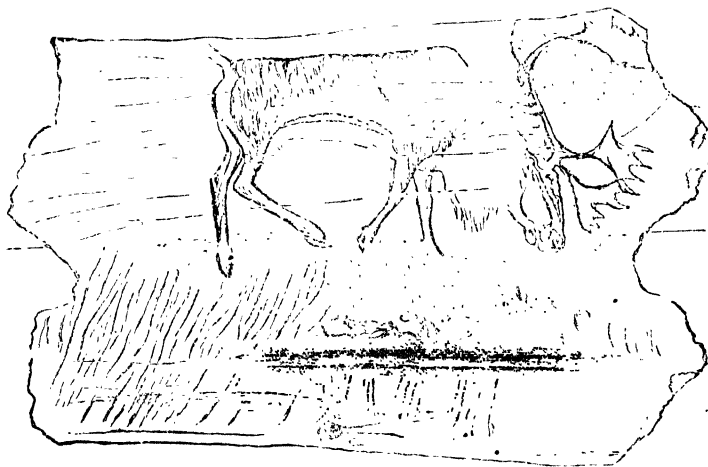


PORTRAIT OF MAMMOTH.

Drawn with a flint on a piece of Mammoth's Ivory ; from Cave of La Madeleine, Dordogne, France.



EARLIEST PORTRAIT OF A MAN, WITH SKIPIENT AND HORSES' HEADS.
From Grotto of Les Eyzies. Reindeer Period.



REINDEER FEEDING.*

From Grotto of Thayngen, near Schaffhausen, Switzerland.

which he holds to be the fragments of an animal named by him *Pithecanthropus Erectus*, or "upright ape-man." The several portions were found adjacent, but at different times, so that their identity as parts of the same individual has been questioned. But although anthropologists are not in agreement as to the remains being positively human, the majority hold that opinion, and it is not without significance to note that the bones were found in that part of the globe where it is highly probable that man and ape became differentiated. A comparison of the cranium with that of Neanderthal shows that it is of decidedly lower type, and that it may be classified as between the Neanderthal man and the gorilla.

In trying to fix anything like definite dates for man's existence upon earth, we must reverse the process by which we have proved the enormous antiquity of his earliest remains, and ascend step by step from the known to the unknown. The first step is that supplied by history.

Until very recently, the palm of antiquity, limiting that term to the historic period, rested with Egypt. Its chronology started with Menes, its reputed earliest king, whose date Professor Flinders Petrie fixes at 4777 B.C. "with a possible error of a century." The old scepticism as to the actual personality of the ancient Pharaohs is dispelled by modern research, Professor Petrie having found traces of kings before Menes, while there appears good reason for accepting Dr. Borchardt's claims to have discovered the actual tomb and personal relics of that king at Nagada, a little north of Thebes.

But it would seem that Egypt must yield priority to Babylonia. For in recent excavations at Nuffar or Nippur, in Northern Babylonia, Dr. Hilprecht has unearthed from the deepest human deposits in the ruins of the temple of Bel a number of tablets which he contends justify him in dating the founding of that temple, and the first settlement of the city, "somewhere between 7,000 and 6,000 B.C. and possibly earlier." And as the tablets are inscribed with cuneiform characters, which are the slow outcome of picture-writing, as are all other alphabetic and syllabic signs, it may yet be proved that Babylonia possessed a script at least 1,300 years

before the earliest known Egyptian hieroglyphs. It is true that their love of the decorative and their veneration for what is old may explain the persistence of the use of primitive modes of writing among the Egyptians, but this cannot weigh against the argument that the more central position of Mesopotamia gave her advantages which quickened culture within her borders.

Nor do these two great empires monopolise the story of antiquity. Explorations in Greece and the surrounding archipelago have brought to light a third venerable centre, perchance an indigenous centre of civilisation, whose relics show that "we have probably to deal with a total period of civilisation in the *Ægean* not much shorter than that in the Nile Valley." So that centuries before the Phœnicians launched their craft upon the Midland Sea, or sailed beyond the Pillars of Hercules, and at a period when the *Iliad* and *Odyssey* were not in existence, there was active intercourse between East and West, intercourse, as evidenced by the discovery of a commercial script, even between Arabia and Iberia. Thus does the epigraphic and other material which the spade of the antiquarian has upturned and the skill of the philologist deciphered, push ever farther back the horizon of history. But beyond that receding marge lie the vast domains of man's past which it is the province of the prehistoric archaeologist, the palæontologist, and the geologist to explore.

Here, then, we take leave of the one and follow the guidance of the other.

The earliest historical civilisations were all acquainted with metals, chiefly in the form of bronze, which is an alloy of copper and tin, very hard, easily cast, and well adapted for every description of tool and weapon. Indeed, it has only been superseded by iron within recent historical times. But the Bronze Age was preceded by a long Neolithic period, when stone, finely wrought and often ground or polished, was used for the purposes to which metal was afterwards applied. The men of this Neolithic period, who reached Europe from the east or south, probably from both regions, were comparatively civilised; they had all the common domestic animals, the dog, horse, ox, sheep, goat, and pig; also some of the cultivated cereals and fruits;

they knew the arts of cooking, spinning, weaving, and pottery, they were grouped into clans and tribes, and lived in villages. Some think the Iberian or Basque people may be a remnant of this Neolithic race, who were driven westward by the later wave of Celtic migration just as the Celts were driven by the still later waves of Teutonic and Slavonic immigrants. Be this as it may, it is certain that a Neolithic people were spread very widely over the globe, as their remains of very similar character are found almost everywhere in Europe, Asia, and America, and always in association with the existing or most recent fauna and configuration of the earth's surface.

The difficulty in assigning any precise date for these remains arises very much from the fact that the Neolithic passed into the Bronze or historical civilisation, at different times in different countries. The Australians, the Polynesians, and the Esquimaux were or are still in the Stone period, while steam-engines are spinning cotton at Manchester, and the most famous cities of Egypt and the East have been for centuries buried under shapeless mounds of their own ruins. It is probable that all Europe remained in the Neolithic stage for many centuries after the historical date of the commencement of the Egyptian empire.

Still there are some remains which may enable us to form an approximate conjecture of the time during which this Neolithic period may have lasted.

The two principal clues are furnished :

1. By the Danish mosses and kitchen-middens.

2. By the Swiss lake-dwellings.

In Denmark there are a number of peat mosses varying in depth from ten to thirty feet, which have been formed by the filling-up of small lakes or ponds in hollows of the Glacial drift. Around the borders of these mosses, and at various depths in them, lie trunks of trees which have grown on their margin. At the present surface are found beech-trees, which are now, and have been throughout the whole historical period of 2,000 years, the prevalent form of forest vegetation in Denmark. Lower down is found a zone of oaks, a tree which is now rare and almost superseded by the beech. And still lower, towards the bottom of the mosses, the fallen trees are almost entirely Scotch firs, which have been long

unknown in Denmark and when introduced will not thrive there. It is evident therefore, that there have been three changes of climate, causing three entire changes in the forest vegetation in Denmark, since these mosses began to be formed. The latest has lasted certainly for 2,000 years, and we cannot tell how much longer, so that some period of more than 6,000 years must be assumed for the three changes.

Now, it is invariably found that remains of the Iron Age are confined to the present or beech era, while bronze is found only in that of oak, and the Age of Stone coincides with that of the Scotch fir.

The kitchen-middens afford another memorial of the prehistoric age in Denmark. There are mounds found all along the sheltered sea-coasts of the mainland and islands, consisting chiefly of shells of the oyster, cockle, limpet, and other shell-fish, which have been eaten by the ancient dwellers on these coasts. Mixed-up with these are the bones of various land animals, birds, and fish, and flint flakes, axes, worked bones and horns, and other implements, including rude hand-made pottery. The relics are very much the same as those found in the fir zone of the peat mosses, and although old as compared with the Iron or historical age, they do not denote any extreme antiquity. The shells are all of existing species, though the larger size of some of those found on the shores of the Baltic shows that the salt water of the North Sea had then a freer access to it than at present. The bones of animals, birds, and fish are also all of existing species, and no remains of extinct animals, such as the mammoth, or even of reindeer, have been found. By far the most common are the red deer, roe-deer, and wild boar. The dog was known, and appears to have been the only domestic animal among the earliest Neolithic peoples.

Most of the stone implements are rude, but a few carefully-worked weapons have been found, and a few specimens of polished axes, which, with the presence of pottery and the nature of the fauna, show conclusively that these Danish remains are all of the Neolithic age and subsequent to the close of the Glacial period. In fact, similar shell mounds are found in almost all quarters of the globe where savage tribes have lived on the sea-coast, subsisting mainly on shell-fish,

and they are probably still being formed on the shores of the Greenland and Arctic Seas, and in Australia, and remote islands of the Pacific.

Human remains are scarce in these Danish deposits, but numerous skulls and skeletons have been found in tumuli which, from their situation and from stone implements being buried with the dead, may be reasonably inferred to be those of the people of the peat mosses and shell mounds. They denote a short race with small and very round heads, in many respects resembling the present Lapps, but with a more projecting ridge over the eye.

On the whole, all we can conclude from these Danish remains is that at some period, not less than 6,000 or 7,000 years ago, when civilisation had already been long established in the valley of the Nile, rude races resembling the Lapps or Esquimaux lived on the shores of the Baltic, who, although so much more recent, and acquainted with the domestic dog, pottery, and the art of polishing stone, had not advanced much beyond the condition of the later cave-men of the South of France; and that this race was succeeded by one which brought in the much higher civilisation of the Bronze Age.

The lake-dwellings of Switzerland give still more detailed and interesting information as to Neolithic times.

During a very dry summer in 1854, the Lake of Zurich fell below its usual level and disclosed the remains of ancient piles driven into the mud, from which a number of deer-horns and other implements were dredged up. This led to further researches, and the result has been that a large number of villages built on these piles has been discovered in almost all the Swiss lakes, as well as in those of Italy and other countries. On the whole, more than 200 have been discovered in Switzerland, and fresh ones are being constantly brought to light. They range over a long period, a few belonging to the Iron Age and even to Roman times; while the greater number are almost equally divided between the Age of Bronze and that of Stone. Some of them are of large size, and must have been long inhabited and supported a numerous population, from the immense number of implements found, which at one station alone, that of Concise on the Lake of Neuchâtel, amounted to 25,000. These

implements consist mainly of axes, knives, arrow-heads, saws, chisels, hammers, awls, and needles, with a quantity of broken pottery, spindle-whorls, sinkers for nets, and other objects.

In the oldest stations, where no trace of metal is found, and the decay of the piles to a lower level shows the greatest antiquity, the implements are all of the Neolithic type, and the animal remains associated with them are all of the recent fauna. There are no mammoths, rhinoceroses, or reindeer; the wild animals are the red deer and roe, the urus, bison, elk, bear, wolf, wild cat, fox, badger, wild boar, ibex, and other existing species; and of domestic animals, the dog, pig, horse, goat, sheep, and at least two varieties of oxen. Birds, reptiles, and fish were all of common existing species. Carbonised ears of wheat and barley have been found, as also pears and apples, and the seeds, stones, and shells of raspberry, blackberry, wild plum, hazel-nut, and beech-nut. Twine, and bits of matting made of flax, as well as the occurrence of spindle-whorls, show that the pile dwellers were acquainted with the art of weaving.

On the whole, these pile-villages show that a large population lived in Switzerland for a long time before the dawn of history, and that they had already attained a considerable amount of civilisation at their first appearance, which went on steadily increasing down to the time of the Roman conquest. Various attempts have been made to fix an approximate date for the earliest of these pile-villages, but they have not been very successful. They have been based mainly on the amount of silting up which has taken place in some of the smaller lakes since the piles were driven in, as compared with that which has occurred since the Roman period. The best calculations appear to show that 6,000 or 7,000 years ago Switzerland was already inhabited by men who used polished stone implements, but how long they had been there we have no distinct evidence to show. Perhaps 10,000 years may be taken as the outside limit of time that can be allowed for the Neolithic period in Switzerland, Denmark, or any known part of Europe.

In Egypt, however, there is evidence of a much greater antiquity. Fragments of pottery, which was entirely unknown in the Palæolithic age, have been brought

up by borings in the Nile Valley from depths which, at the average rate of accumulation there during the last 3,000 years of three inches and a half in a century, would denote an age of from 13,000 to 18,000 years. Looking at the dense population and high civilisation of Egypt at the commencement of history, 7,000 years ago, it is highly probable that this time at least must have elapsed since the country was first occupied by a settled agricultural population as far advanced in the arts of life as the lake-dwellers of Switzerland.

Any calculation, however, of Neolithic time takes us back a very short step in the history of the human race. The Palæolithic period must evidently have been of vastly longer duration.

Here it is convenient to note that the theory of an absolute break, through geological changes and subordinate causes, between the Palæolithic and Neolithic Ages which long held the field, has disappeared (except in Great Britain) before the evidence against tenantless intervals in prehistoric times. The tools and weapons found in certain caves, as at Solutré, in the Maçon district, and at Mentone, show an overlapping of earlier and later specimens, which witness to fusion in more or less degree between prehistoric peoples. Doubtless in the more northerly parts of the Continent there were local migrations and retreats, but there was no wholesale withdrawal or extermination of the ruder races, leaving vacant areas for their conquerors. Europe has been continuously inhabited by man since he first set his foot in it, and the proofs of this, ever increasing, come in the shape of the rude specimens of art which link Northern with Southern Europe, and, what is of the deepest interest, both regions with the Eastern Mediterranean. For these and other materials, more advanced in character, are revolutionising the old theories of European civilisation, which held it to be a wholly imported product, and are showing how indigenous that culture was, originating, mayhap, as shown already, in the islands of the Aægean, and diffusing itself, not without Oriental influences upon it, in westerly directions.

In carrying our researches further back, the possibility of assigning anything like a definite date for the existence of man depends on the question whether

it is possible to fix any approximate dates for the commencement and duration of the Glacial period.

In the first place, how do we know that there has been any such period?

In England we are more familiar with water than with ice; we therefore recognise at once the signs of the action of water. If we come across a dry channel, winding in alternating curves between eroded banks, and showing deposits of gravel and silt, we say without hesitation, "Here a river formerly ran." But if we had lived in Switzerland, we should recognise with equal certainty the signs of glacial action. Suppose any one visiting Chamouni walks up the valley to the foot of the Mer de Glace, where the Arve issues from the glacier, let us say in autumn, when the front of the glacier has shrunk back some distance, what does he see? Rounded and polished rocks, which seem as if they had been planed by a gigantic plane working downwards over them, and on these a mass of miscellaneous rubbish shot down as if from a dust-cart, consisting of stones of all sizes, some of them boulders as big as a house, scattered irregularly on a mass of clay and sand. When he looks more closely he will see that these stones are not rounded as they would be by running water, but blunted at their angles by a slow grinding action; and in many cases, both the stones and the rocks on which they rest are scratched and striated in a direction which is that of the glacier's motion. At the bottom of this rubbish-heap he will find the clay into which the rock has been ground by the full weight of the glacier, very stiff and compact; while if he looks down the valley, he will see, on a hot day, a swollen and turbid river issuing from the melting ice and flooding the meadows, on which it will leave a deposit of fine mud. These are effects actually produced by ice; and wherever he sees them he can infer the former presence of a glacier, as certainly as when he sees a bed of rounded pebbles he infers the former presence of running water. The planed rocks are commonly known as *ruches montonnées*, from a fancied resemblance of their smooth, rounded hummocks to the backs of a flock of sheep lying down; the rubbish heaps are called *moraines*; and the stiff bottom clay with boulders embedded in it is called the *grund-*

moraine, till, or boulder clay; while the blunted and scratched stones are said to be glaciated.

These tests, therefore, *roches moutonnées*, moraines, boulders, and glaciated stones, are infallible proofs that wherever we find them there has been ice-action, either in the form of glaciers, or of icebergs, which are only detached portions of glaciers floated off when the glacier ends in the sea. Now, if our inquirer extends his view, he will find that these signs, the meaning of which he has learned at the head of the valley of Chamouni, are to be found equally in every valley and over the whole plain of Switzerland, up to a height of more than 3,000 feet on the slope of the opposite Jura range, while on the Italian side the Glacial drift extends far into the plains of Piedmont.

Extending our view still more widely, we find that every high mountain range in the Northern hemisphere has had its system of glaciers; and one great mountain mass, that of Scandinavia, has been the nucleus of an enormous ice-cap, radiating to a distance of not less than 1,000 miles, and thick enough to block up with solid ice the North Sea, the German Ocean, the Baltic, and even the Atlantic up to the 100 fathom line. This ice-cap, coalescing with local glaciers from the higher lands of England, Scotland, and Ireland, swept over their surface, regardless of minor inequalities of hill and valley, as far south as to the present Thames Valley, grinding-down rocks, scattering drift and boulders, and, in fact, doing the first rough sub-soil ploughing which prepared most of our present arable fields for cultivation. The same ice-sheet spread masses of similar drift over Northern Germany, Sweden, Denmark, and the northern half of European Russia, and left behind it numerous boulders which must have travelled all the way from Norway or Lapland.

If we cross the Atlantic we find the same thing repeated on a still larger scale in North America. A still more gigantic ice-cap, radiating from the Laurentian ranges, which extend towards the Pole from Canada, has glaciated all the minor mountain ranges to the south up to heights sometimes exceeding 3,000 feet, and coalescing with vast glaciers thrown off by the Rocky Mountains from their eastern flanks, has

swept over the whole Continent, leaving its record in the form of drift and boulders, down to the 40th parallel of latitude. It is difficult to realise the existence of such gigantic glaciers, but the proofs they have left are incontrovertible, and we have only to look to Greenland to see similar effects actually in operation. The whole of that vast country, where at former periods of the earth's history, fruit-trees grew and a genial climate prevailed, is now buried deep under one solid ice-cap, from which only a few of the highest peaks protrude, and which discharges its surplus accumulation of winter snow by huge glaciers filling all the fiords and pushing out into the sea with an ice-wall sometimes forty or fifty miles in length, from which icebergs are continually breaking off and floating away. A still more gigantic ice-wall surrounds the Southern Pole, and in a comparatively low latitude presented an insuperable barrier to the further progress of the ships of Sir J. Ross's expedition.

A still closer examination of the Glacial period shows that it was not one single period of intense cold, but a prolonged period, during which there were several alternations, the glaciers having retreated and advanced several times with comparatively mild inter-glacial periods, but finally with a tendency on each successive advance to contract its area, until the ice shrank into the recesses of high mountains, where alone we now find it. Another noteworthy point is that during this long Glacial period there were several great oscillations in the level of sea and land.

Such was the Glacial period, and to assign its date is to fix the date when we know with certainty that man already existed, and had for some long though unknown time previously been an inhabitant of earth. Is this possible? To answer this question we must begin by considering what are the causes, or combination of causes, which may have given rise to such a Glacial period. When we look at the causes which actually produce existing glaciers, we find that extreme cold alone is not sufficient. In the coldest known region of the earth, in Eastern Siberia, there are no glaciers, for the land is low and level and the air dry. On the other hand, in New Zealand, in

the latitude of England and with a mean annual temperature very similar to that of the West of Scotland, enormous glaciers descend to within 700 feet of the sea-level. The reason is obvious; the Alps of the South Island rise to the height of 11,000 feet above the sea, and the prevalent westerly winds strike on them laden with moisture from their passage over a wide expanse of ocean. In like manner, in the case of the Swiss Alps, the Himalayas, and other great mountain ranges, high land and moist winds everywhere make glaciers. Given the moist wind, any great depression of temperature, whether arising from elevation of land or other causes, will make it deposit its moisture in the form of snow, and the accumulation of snow on a large surface of elevated land must inevitably relieve itself by pushing down rivers of ice to the point where it melts, just as the rain-fall relieves itself by pouring down rivers to the point where the surplus water finds its level in the sea.

When the two conditions of high land and moist winds are combined, low temperature increases their effect, and the snow-fall consolidates into a great ice-cap, from which only the tops of the highest mountains project, and which pushes out gigantic glaciers far over surrounding countries and into adjacent seas. Such is now the case in Greenland, and was formerly the case in Scandinavia, where a huge sheet of ice radiated from it over Northern Germany as far as Dresden, filled up the North Sea, and, coalescing with smaller ice-caps from the highlands of Scotland, England, and Wales, buried the British Islands up to the Thames under massive ice. At the same period glaciers from the Alps filled the whole plain of Switzerland, and in North America the ice cap extended from Labrador to Philadelphia.

The first remark to be made is that, as these phenomena depend primarily on moist winds, and only secondarily on cold, and as moist winds imply great evaporation and therefore great solar heat over extensive surfaces of water, all explanations are worthless which suppose a general prevalence of cold, either from less solar radiation, passage through a colder region of space, or otherwise. We must seek for a cause which is con-

sistent with the general laws of Nature, and with the leading facts of the actual generation of glaciers at the present day.

Astronomers believe that they have discovered such a cause in the theory first started by Mr. Croll, that the glaciation of the Northern hemisphere was due to a secular change in the shape of the earth's orbit, combined with the shorter changes produced by the precession of the equinoxes. The latter cause is due to the fact that the earth is not an exact sphere, but slightly protuberant at the equator, and that the attraction of the sun on this protuberant matter prevents the axis round which the earth rotates from remaining exactly parallel with itself, and makes it move slowly round its mean position just as we see in the case of a schoolboy's top, which reels round an imaginary upright axis while spinning rapidly. This revolution in the case of the earth completes its circle in about 21,000 years, so that if summer, when the pole is turned towards the sun, occurred in the Northern hemisphere when the earth was in perihelion, or nearest the sun, and consequently winter when it was in aphelion, or furthest away from the sun, after 10,500 years the position would be exactly reversed, and winter would occur in perihelion and summer in aphelion; the Southern hemisphere then enjoying the same conditions as those of the Northern one 10,500 years earlier. And in another 10,500 years things would come back to their original position.

Now if the earth's orbit were an exact circle this would make no difference, all the four seasons would be of the same duration and would receive the same solar heat in both hemispheres, and if the orbit were nearly circular, so that the difference between the perihelion and aphelion distances was small, the effect would be small also. But if the orbit flattened out or became more eccentric, the effect would be increased. The time of traversing the aphelion portion of the annual orbit would become longer and that of traversing the perihelion portion shorter, as the orbit departed from the form of a circle and became more elliptic. Whenever, therefore, the North Pole was turned away from the sun in aphelion, the winters would be longer than the summers in the Northern hemisphere, and conversely, the summers would be longer than the winters when, after an

interval of 10,500 years, precession brought about the opposite condition of things, in which winter occurred in perihelion.

At present the earth's orbit is nearly circular, and the Northern hemisphere is nearest the sun in winter and furthest from it in summer, but the difference is only about 3,000,000 miles, or a small fraction of the total mean distance of 93,000,000 miles, which makes the winter half of the year shorter than the summer half by nearly eight days.

But mathematical calculations show that under the complicated attractions of the sun, moon, and larger planets, the eccentricity of the earth's orbit slowly changes at long and irregular intervals, but always within fixed limits, increasing up to a certain point and then diminishing till it approaches the circular form, when it again increases. The *maximum* limit of eccentricity makes the difference between the greatest and least distances of the earth from the sun range between 12,000,000 and 14,000,000 miles, which is four or five times as great as at present; and with this eccentricity, and winter in aphelion in the Northern hemisphere, the winter half of the year in Northern latitudes would be twenty-six days longer than the summer half, instead of eight days shorter as at present. In this state of things the quantity of heat received daily from the sun in winter would be such as to lower the temperature of the whole Northern hemisphere by 35° Fahrenheit, and reduce the average January temperature of England from 39 to 4°, while the mean summer temperature would be about 60° higher than at present. But this summer heat, derived from solar radiation, would not counteract the cold of winter, for all moisture during winter being accumulated in ice and snow, most of the solar heat of summer would be expended in supplying latent heat to melt a portion of this frozen accumulation, and dense fogs would intercept a large amount of the solar radiation.

After 10,500 years this state of things would be entirely reversed, and with twenty-six days more of summer, and the earth 12,000,000 miles nearer the sun in winter, the Northern hemisphere would enjoy something like perpetual spring. There can be no doubt that these are real causes, and the only difficulty is to account for their not having been more invariable

in their operation and given us a constant succession of Glacial periods since the commencement of geological time, whenever the eccentricity became great, which occurs at irregular periods, but practically about three times in every 3,000,000 years. The answer is that the effects would only occur when the other conditions were present, viz., high land, moist winds, and an absence of oceanic currents of warm water like the Gulf Stream. The latter is one of the main causes which affect temperature. The difference of temperature between the equatorial and polar regions causes a constant overflow of heated air from south to north, which is replaced by an indraught of colder air from north to south, which, owing to the greater velocity of the earth's rotation towards the equator, takes the form of trade-winds blowing constantly from a more or less easterly direction. These winds, sweeping over the Atlantic Ocean, raise its level at its western barrier, and the accumulation deflected by America flows off in a current which extends to the western shores of Europe and carries mild winters into the extreme North. In the Orkney and Shetland Islands, which are nearly in the same latitude as Cape Farewell in Greenland, there is so little ice that skating is a rare accomplishment, and curling, the roaring game which is so popular some degrees further south, is quite unknown. If the Gulf Stream were diverted, and the highlands of Scotland upheaved to the height of the Alps of New Zealand, the whole country would again be buried under glaciers pushing out into the Atlantic and German Ocean.

These considerations may show why every period of great eccentricity was not necessarily a Glacial period, though under certain conditions it must inevitably have been so, and geologists are generally agreed that the last period of the sort must have been one of the main causes of the great refrigeration which set in over the whole Northern hemisphere towards the close of the Pliocene period, and continued until recent times. But in this case we can fix the date with great accuracy, for calculation shows that the last period of great eccentricity began 240,000 years ago, and lasted 160,000 years. For the last 50,000 years the departure of the earth's orbit from the circular form has been exceptionally small. We may suppose the Glacial

period, therefore, to have commenced 240,000 years ago, come to its height 160,000 years ago, and finally passed away 80,000 years before the present time.

These dates receive much confirmation from conclusions drawn from a totally different class of facts. A bed of existing marine shells of Arctic type, apparently belonging to one of the latest phases of the Glacial period, has been found on the top of a hill in North Wales which is now 1,100 feet above the sea-level, and the same marine drift seems to extend to a height of upwards of 2,000 feet. There must, therefore, have been a depression of the land sufficient to carry it many fathoms below the sea, and a subsequent elevation sufficient to carry the sea bottom up to a height of certainly 1,100 and probably over 2,000 feet. In all probability, these movements were very slow and gradual, like those now going on in Greenland and Scandinavia, for there are no signs of earthquakes or volcanic eruptions in the district; and it is probable that pauses occurred in the movements, and a long pause when subsidence had ceased before elevation began. Without taking these pauses into account, and assuming the elevation only just completed, and that Sir C. Lyell's average of two and a half feet a century is a fair rate for these slow movements, it would have required 50,000 years of continued elevation to bring these shells, and 80,000 years to bring the marine drifts, up to their present height above the sea; and a similar period previously must be allowed for their submergence. We may fairly conclude, therefore, that upwards of 100,000 years have elapsed since these shells lived and died at the bottom of the sea towards the close of the Glacial period, which corresponds very well with the date assigned by astronomical calculations.

Again, another attempt to fix a date for the close of the Glacial period has been made by Monsieur Forel, a Swiss geologist, from actual measurements of the quantity of suspended matter poured into the Lake of Geneva by the Rhone, and the area of the lake which has been silted up since it was filled by ice. It is evident that this silting up at the head of the lake could only begin when the great Rhone glacier, which once extended to the Jura Mountains,

had shrunk back into its valley far enough to pour its river into the lake. M. Forel's calculations give 100,000 years as the probable time required for the river to silt up so much of the lake as is now converted into dry land. The data are somewhat vague, as on the one hand the rate of deposition may have been greater when a large mass of ice and snow was being melted, while on the other hand it may have been less, while the glacier still occupied the valley almost to the head of the lake, and the Rhone had only a course of a few miles. All that can be said, therefore, is that it gives an approximate date for the close of the Glacial period which, like that derived from rates of depression and elevation, corresponds wonderfully well with the date required by Croll's theory.

Now, whether the date be a little more or a little less, it is clear that man existed on earth throughout a great part, if not the whole, of the Glacial period. He had existed a long while in conjunction with a fauna of more Southern and African aspect, before the reindeer migrated in vast herds into Southern France. His remains are found in caves and river drifts associated with those of the hippopotamus, an animal which could by no possibility have lived in rivers which for half the year were bound hard in ice. Such remains must therefore of necessity date either from a period before the great cold had set in, or from some inter-glacial period prior to the great cold which drove the reindeer, musk ox, glutton, and Arctic hare as far south as the slopes of the Pyrenees.

In England we can trace distinctly at least four successions of boulder clays, that is of the ground moraines of land ice, separated by deposits of drifts, sands, and brick-earths, formed while the glaciers were retreating and melting; and a number of the Palæolithic implements have been found in what was undoubtedly part of the period of the second or great chalky boulder clay, which overspreads the southern and eastern counties of England up to the Thames Valley. The discovery of Palæolithic remains in the deposit of St. Prest, near Chartres, makes it probable that some at least of the rude instruments date back to the very beginning of the Glacial period, and a good body

of evidence points to the conclusion that man was living during the many alternations of climate of that period, and whenever the glaciers retreated, followed them up closely.

In seeking to trace back human origin to more remote periods, we must begin by describing shortly the geological periods during which the existence of man may have been possible. It is useless to go back beyond the Chalk, which was deposited in a deep sea and forms a great break between the modern and the Secondary period, in which latter reptiles predominated, and mammalia are only known by a few remains of small insectivorous and marsupial animals.

The inauguration of the present state of things commences with the Tertiary period. This has been divided into three stages: the Eocene, in which the first dawn appears of animal life similar in type to that now existing; the Miocene, in which there is a still greater approximation to existing forms of life; and the Pliocene, in which existing types and species become preponderant. Then comes the Pleistocene or Quaternary, including the great Glacial period, during which the whole marine and nearly the whole terrestrial fauna are of existing or recently extinct species, though very different in their geographical distribution from that of the present day. And finally we arrive at the recent period, when the present climate and the present configuration of lands, seas, and rivers prevail with very slight modifications, and no changes have taken place either in the specific character or geographical distribution of life, except such as can be clearly traced to existing causes such as the agency of man.

This is the geological frame-work into which we have to fit the history of man's appearance upon earth. We have traced him through the recent and Quaternary; can we trace him further into the Tertiary? Speaking generally, we may say that the Eocene period was that in which Europe began to assume something like its present configuration, and in which mammalian life, of the higher or placental type, began to supplant the lower forms of marsupial life which had preceded. But these higher types were for the most part of a more primitive

or generalised character than the more specialised types of later periods, and the highest order, that of the *primates*, which includes man, ape, and lemur, was, as far as is yet known, represented only by two or three extinct lemurian forms.

The plan on which Nature has worked in the evolution of life seems always to have been this: she begins by laying down a sort of ground plan, or generalised sketch of a particular form of life, say, first of vertebrata, then of fish, then of reptiles, and finally of mammalian life. This sketch resembles the simple theme of a few notes on which a musician proceeds to work out a series of variations, each surpassing the other in complication and specialised development in some particular direction. Now, in the Eocene period we are in the stage of the theme and first simple variations of the mammalian melody. It hardly seems likely, therefore, that a creature so highly specialised as man, even in his most rudimentary form, should have existed, and in the absence of any direct evidence to the contrary, it is safe to assume that his first appearance must have been of later date.

But when we come to the Miocene and Pliocene periods, the case is different. It is true that in the Miocene the specialisation of certain families, as for instance that of the horse, had not been carried out to the full extent, and that all the species of Miocene land-mammals and several of the genera are now extinct. But there were already true apes and baboons, and even two species of anthropoid ape, one of which, the *Dryopithecus*, whose fossil remains were found in the South of France, was as large as a man.

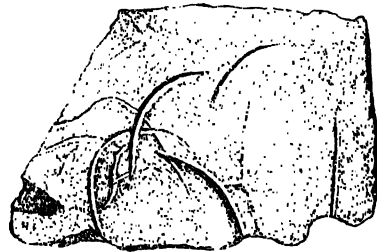
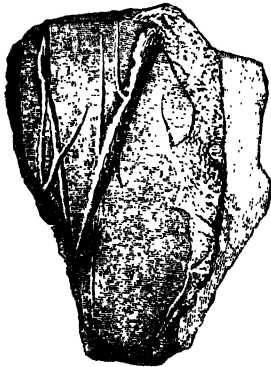
Now, wherever anthropoid apes lived it is clear that, whether as a question of anatomical structure or of climate and surroundings, man, or some creature which was the ancestor of man, might have lived also. Anatomically speaking, apes and monkeys are as much special variations of the mammalian type as man, whom they resemble bone for bone and muscle for muscle, and the physical animal man is simply an instance of the quadrumanous type specialised for erect posture and a larger brain. The larger brain, implying greater intelligence, must also have given him advantages in contending with outward circumstances, as for instance, by fire and clothing against cold, which might

enable him to survive when other species succumbed and became extinct.

If he could survive, as we know he did, the adverse conditions and extreme vicissitudes of the Glacial period, there is no reason why he might not have lived in the semi-tropical climate of the Miocene period, when a genial climate extended even to Greenland and Spitzbergen, and when ample forests supplied an abundance of game and edible fruits. The same reasons apply, with still greater force, to the Pliocene period, when existing types and species had become more common and when a mild climate still prevailed. The existence of Tertiary man must antecedently be pronounced highly probable; but probabilities are not proofs, and the

near Chartres, which were always considered to be Pliocene. Since the discovery, however, some geologists have contended that these strata are not Pliocene, but of the earliest Quaternary, or perhaps a transition period between Pliocene and Quaternary. This evidence cannot, therefore, be accepted as conclusive for anything more than proof that man's existence extends at any rate over the whole Quaternary period, comprising the vast glacial and inter-glacial ages which have effected such changes in the earth's surface.

Less disputable evidence is supplied by the Pliocene of Monte Aperto, near Siena, Italy, where bones of the *Balenotus*, a sort of Pliocene whale, which bear marks of incisions which to all appearance must



INCISED BONES OF *BALENOTUS*. Pliocene. From Monte Aperto.
Figured by Quatrefages, "*Hommes Fossiles et Hommes Sauvages*," p. 93.

fact of such existence must be determined by the evidence. All that can be said is that while there ought to be great caution in admitting as established a fact of such importance, there ought to be no determined predisposition to disbelieve it, like that which for so many years retarded the acceptance of the evidence for Palæolithic man. On the contrary, the fact that man existed in such numbers and under such conditions as have been described in the Quaternary period, establishes a strong presumption that his first appearance must date from a much earlier period.

Let us see how the evidence stands. Undoubted stone implements, and bones bearing traces of cuttings by flint knives, have been found in strata at St. Prest,

have been made by flint knives employed in hacking off the flesh. Doubts were thrown at first on this, as it was thought that possibly fish, or some gnawing animal like the beaver, might have cut the grooves with their teeth. But later specimens have been found on which the cuts have a regular curvature which could not have been made by any teeth, and present precisely the same appearance as the cuts which are so commonly found on the bones of reindeer and other animals in hundreds of Palæolithic caves.

M. Quatrefages, who is a very eminent and at the same time very cautious authority, says, in his last work on the subject published in 1884, "*Hommes Fossiles et Hommes Sauvages*," that "the most in-

credulous must be convinced. Had they been found in Quaternary beds no one would have hesitated to regard them as intentionally caused. The hand of man armed with a cutting instrument could alone have left marks of this sort on a plain surface. It is evident that some horde of savages of these remote times had found the carcass of this great cetacean stranded on the shore, and cut the flesh off with stone knives just as the savages of Australia do at the present day."

If these bones of the *Balenotus* really bear marks of human tools, the spectacle which might have been witnessed on the shore of the Pliocene sea perhaps 500,000 years ago, must have closely resembled that given by Sir John Lubbock from a description by Captain Grey of a recent whale feast in Australia. "When a whale is washed on shore it is a real godsend to them. Fires are immediately lit, to give notice of the joyful event. Then they rub themselves all over with blubber, and anoint their favourite wives in the same way; after which they cut down through the blubber to the beef, which they sometimes eat raw and sometimes broil on pointed sticks. As other natives arrive they 'fairly eat their way into the whale, and you see them climbing in and about the stinking carcass, choosing tit-bits.' For days 'they remain by the carcass, rubbed from head to foot with stinking blubber, gorged to repletion with putrid meat—out of temper from indigestion, and therefore engaged in constant frays—suffering from a cutaneous disorder by high feeding—and altogether a disgusting spectacle. There is no sight in the world,' Captain Grey adds, 'more revolting than to see a young and gracefully-formed native girl stepping out of the carcass of a putrid whale.'"

The evidence for Miocene man is much of the same character: very strong and conclusive as far as it goes, but resting on too few instances to be universally accepted. In 1868 the Abbé Bourgeois laid before the Anthropological Congress at Paris certain flints which he had found *in situ* in undoubted Miocene strata at Thenay, in the Beauce, near Blois. They were received with general incredulity, and the traces of human design were denied. The Abbé, however, persisted, and having made fresh discoveries the subject was referred to the next meeting of the Congress at Brussels,

who appointed a commission of fifteen of the most eminent European authorities in such matters to report upon it. Nine reported that some of the flints

showed undoubted traces of human workmanship, five were of an opposite opinion, and one was neutral. Since then fresh objects have been found, and M. Quatrefages, who had formerly been doubtful, says in his recent work:

"These new objects, and especially a scraper which is one of the most distinctly characterised of that class of implements, have removed my last doubts." And certainly, if the figures given at page 92 of his "*Hommes Fossiles et Hommes Sauvages*" correctly represent the original implements, and they really came from Miocene strata, doubt is no longer possible. The evidence of design in chipping into a determinate shape is quite as clear as in the similar class of implements from Kent's Cavern or the Cave of La Madeleine. They must either have been chipped by man, or as Mr. Boyd Dawkins supposes, by the *Dryopithecus* or some other anthropoid ape which had a dose of intelligence so much superior to the gorilla or chimpanzee as to be able to fabricate tools. But in this case the problem would be solved and the missing link discovered, for such an ape might well have been the ancestor of Palæolithic man.

The next instance is from Otta, in the valley of the Tagus, where flint implements were alleged to have been discovered by an eminent Portuguese geologist, Señor Ribeiro, in Miocene strata. The subject was fully discussed on the spot, at a meeting of the Anthropological Congress at Lisbon in 1880. The general opinion seemed to be that some of the implements showed undoubted traces of human design, but some good authorities remained sceptical; and although there was no doubt that they were found in Miocene strata, it was thought possible that flints of Quaternary age might have fallen into fissures, or been mixed up with



FLINT SCRAPER.
From Thenay. Miocene
Figured by Quatrefages,
"*Hommes Fossiles et
Hommes Sauvages*," p. 92.

**MIOCENE IMPLEMENTS FROM THENAY COMPARED WITH UNDOUBTED
PALÆOLITHIC IMPLEMENTS FROM QUATERNARY CAVES AND DRIFTS.**

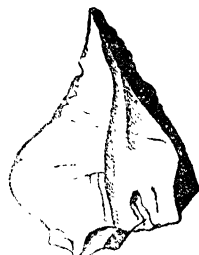
MIOCENE.



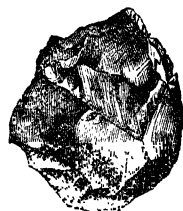
QUATERNARY. Chabou, Belgium. Reindeer Period. Congrès Préhistorique, Bruxelles, 1872.



SCRAPER, OR RUDER KNIFE. Thenay. Miocene. Quatrefages, p. 92.



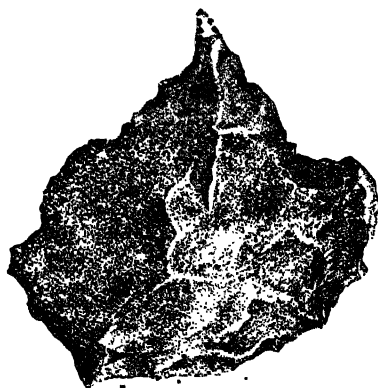
BORER, OR AWL. Thenay. Miocene. Congrès Préhistorique, Bruxelles, 1872.



SCRAPER. Thenay. Miocene. Quatrefages, p. 92.



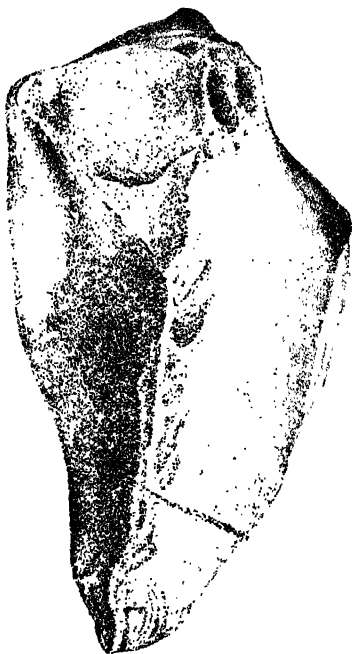
QUATERNARY.
From Le Moustier



QUATERNARY. Mammoth Period.
River Drift, Mesvin, Belgium
Congrès Préhistorique, Bruxelles, 1872.

Miocene sands by floods at some very remote period, and thus become encrusted in a Miocene matrix.

The verdict as to Miocene man in Europe remains "Not proven." Leaving



TERTIARY HÔME.

From Miocene Strata of Targu Valley.

(Half the actual size.)

Quatrefages, "Hommes Fossiles et Hommes Sauvages."

the Old World for the New, the same will apply to the alleged discovery of a human skull in Calaveras County, California, buried under six distinct layers of hardened volcanic ashes, and, presumably, of Pliocene date, if not earlier. Whitney, the Director of the Geological Survey of the United States, and other American geologists, believe this skull to be Pliocene, but doubts have been thrown on its authenticity, and European geologists do not generally accept it.

A human bone is described by Lyell, which was found near Vicksburg in a side valley of the Mississippi, associated

with bones of the extinct Mastodon and Megalonyx. But, although undoubtedly of great antiquity, there is no proof that it does not belong to the Quaternary period, especially as the mastodon seems to have lived until comparatively recent times in America, its remains being often found in recent bogs and peat mosses.

The same remark will apply to the skull which was found, in digging a well at New Orleans, under six distinct layers of cypress forests such as are now growing on the surface, showing as many periods of successive subsidences, subsequent elevations, and stationary periods long enough to allow of a forest growth of many generations of large trees. Here again the antiquity must be very great, but we have no reason to carry it back into Tertiary periods, or beyond the recent periods when the Mississippi began to flow in its present course and form its present delta.

Human remains have also been discovered in caves in Brazil and Mexico associated with bones of extinct animals, but we have no clear information as to the time when these animals became extinct, or as to the exact order of superposition in which the human skulls and implements were found, and the occurrence of a polished stone celt in the same cave throws still more doubt on their extreme antiquity.

Although the instances cited might be multiplied, it must be remembered that remains of Tertiary man are not likely to be abundant. If man was then living, it was probably in fewer numbers and in more limited areas. The pressure of population had not yet driven wandering hordes to follow sea-coasts and cross rivers and mountains in pursuit of food. Probably at this early period man lived more on fruits, and therefore required fewer implements, and his intelligence was less, so that he had less power of fashioning them. For the purposes for which his Palaeolithic descendants chipped stones into shape, he may have used natural stones which would often answer the purpose, but which, when thrown away, would leave nothing by which they could be recognised.

If the forests now inhabited by the gorilla and chimpanzee were submerged and again elevated, no trace would be found of the existence of animals which had built rude nests, used broken branches

of trees as clubs, and cracked cocoa-nuts with hammer stones.

But above all, the surface of these older strata has been so much denuded, that the situations in which alone we might expect to find remains of man have almost entirely disappeared. Ninety-nine hundredths of our Quaternary implements come from river drifts or caves. Where are the Pliocene or Miocene rivers or caves? They have disappeared amidst the revolutions of the earth's surface and the constant denudation which wastes continents away. The negative evidence would be strong if we could point to caves filled with bone-breccias of a Pliocene or Miocene fauna, in which no race was found of human remains. But it is weak as against even a single well-ascertained instance, if it merely amounts to such remains not being frequently found where we could hardly expect to find them. And it is weak against the strong presumption that when Quaternary man is found in such numbers and under such conditions, spread over wide areas in inhospitable climates, he must have had his first origin at earlier times. The cradle of that origin remains undiscovered, perhaps undiscoverable. For in seeking for evidence about Tertiary man in Europe, we are off the scent. He must be searched for in the region or zone where Dr. Dubois found the fragments already described, and the search may, nevertheless, be in vain. For perchance the area of the parting of the ways between the ape-like man and the man-like ape, as lateral descendants of the pithecoïd ancestor, is in some Indo-African land which has long been covered by the sea, and from which, in the warm climates of inter-glacial periods, when a temperate flora grew in northern latitudes, the earliest human beings spread themselves over the then habitable globe, migrating by way of Africa into Europe, and by way of both Europe and Asia into America, while the ancient land-extensions led him dry-footed, to Australia.

With these high probabilities, is it possible to assign any approximate date to man's appearance?

Reckoning by the thickness of the different stratified deposits which make up the earth's crust, and assuming the average rate of their deposition, or what is the same thing, the average rate of waste of land surface, to have been the

same throughout, the whole Tertiary period carries us back barely one-twentieth part of the way towards the first beginnings of fossil-bearing strata. That is, if 100,000,000 years have elapsed since the earth became sufficiently solidified to support vegetable and animal life, the Tertiary period may have lasted for 5,000,000 years; or for 10,000,000 years, if the life-sustaining order of things has lasted, as Lyell supposes, for at least 200,000,000 years. Even if we take the shorter period, the time is ample for the enormous changes which have taken place since the commencement of the Eocene period. The average rate of denudation over the globe has been taken at about one foot in 3,000 years, from actual calculations of the average amount of solid matter carried down by the Mississippi and other great rivers. Now at this rate it would take only 2,000,000 years to wear the whole of Europe down to the sea-level, and, in the absence of any compensating movements of elevation, the whole of North America would be washed away and deposited in strata at the bottom of the Atlantic and Pacific Oceans in less than 3,000,000 years.

If, therefore, the origin of man could be traced down to the middle Miocene, or even to the date of the great anthropoid *Dryopithecus* of Southern France (an ape approximating nearest to the chimpanzee), we should have to assume a period for his existence of probably between one and two millions of years, a mere fraction of the time since the earth became the abode of life and existing causes operated to bring about geological formations.

As regards the habits and manners of Quaternary man we know very little that is positive, and can only gather some vague indications from the relics in caves and river drifts. These, however, are sufficient to establish with certainty that the law of his existence has been one of continued progress. The older the remains, the ruder are the implements and the fewer the traces of anything approaching to civilisation. As already shown, Neolithic man is comparatively civilised. He has domestic animals and cultivated plants; he has clothing and ornaments, well-fashioned tools and pottery, and permanent dwellings. He lives in societies, builds

villages, buries his dead, and shows his faith in a future life by placing with them food and weapons. As we ascend the stream of time these indications of an incipient civilisation disappear. The first vestige of the domestic animals is found in the dog which gnawed the bones of the Danish kitchen-middens, and of the earliest Swiss lake-dwellings. When fairly in Palæolithic times, even the dog disappears, and man has to trust to his own unaided efforts in hunting wild animals for food.

Weapons and implements become more and more rude until, in the oldest deposits, we find nothing but roughly-chipped hatchets, arrow-heads, flakes, and scrapers. Implements of bone, such as barbed harpoons, borers, and needles, which are abundant in the middle Palæolithic or reindeer period, become ruder and then disappear. Pottery, which is extremely abundant in the Neolithic period, either disappears altogether or becomes so scarce that it is a moot question whether a few of the rudest fragments found in caves are really Palæolithic. If so, they clearly date from the later Palæolithic, and pottery was unknown in the earlier Palæolithic times.

Judging from the portraits engraved on bone during the reindeer period, Palæolithic man pursued the chase in a state of nature, though from the presence of bone needles it is probable that the skins of animals may have been occasionally sewed together by split sinews to provide clothing. There can be no doubt that his habitual dwelling was in caves or rock-shelters. Here was his home, here he took his meals and allowed the remains of his food to accumulate. His staple diet consisted of the contemporary wild animals, the mammoth, the rhinoceros, the cave bear, the horse, the aurochs, and the reindeer. Even the great cave lion was occasionally killed and eaten, and the fox and other smaller animals were not despised; while among tribes skilled in the use of the bow and arrow, birds were a common article of food, and fish were harpooned by those who lived near rivers. Wild fruit and roots were also doubtless consumed, and from the formation of their teeth and intestines it is probable that if we could trace the diet of the earliest races of men we should find them

to have been frugivorous, like their congeners the anthropoid apes.

The abundance of wild animals and the long period for which hunting savages inhabited the same spots may be inferred from the fact that at one station alone, that of Solutré in Burgundy, it is computed that the remains of no less than 40,000 horses have been found. All the long bones of the larger animals have been split to extract the marrow, which was, as with the modern Eskimos and other savages, a great delicacy, and seems also to have been used for softening skins for the purpose of clothing.

Among the split bones a sufficient number of human bones have been found to make it certain that Palæolithic man was, occasionally at least, a cannibal; and in several caves, notably that of Chaleux, in Belgium, these bones, including those of women and children, have been found charred by fire, and in such numbers as to indicate that they had been the scene of cannibal feasts. It is a remarkable fact that cannibalism seems to have become more frequent as man advanced in civilisation, and that while its traces are frequent in Neolithic times, they become very scarce or altogether disappear in the age of the maul-moth and the reindeer.

As regards religious ideas they can only be inferred from the relics buried with the dead, and these are scarce and uncertain for the earlier periods. The caves in which Palæolithic man lived on the flesh of the Quaternary animals, have been so often used as burying-places in long-subsequent ages, that it is extremely difficult to ascertain whether the skeletons found in them are those of the original inhabitants. Thus the famous cave of Aurignac, in which Lartet thought he had discovered the tomb of men at whose funeral feast mammoths and rhinoceroses were consumed, is now generally considered to be a Neolithic burying-place superimposed on an abandoned Palæolithic habitation.

There are not more than five or six well authenticated instances in which entire Palæolithic skeletons have been found under circumstances in which there is a fair presumption that they may have been interred after death, and these afford no clear proof of articles intended for use in a future life having been deposited with them. All we can

say, therefore, is that from the commencement of the Neolithic period downwards, there is abundant proof that man had ideas of a future state of existence very similar to those of most of the savage tribes of the present day; such proof is wanting for the immensely longer Palæolithic period, and we are left to conjecture. The only arts which can with certainty be assigned to our earliest known ancestors are those of fire and of fashioning rude implements from stone by chipping. Everything beyond this is the product of gradual evolution.

CHAPTER VI.

MAN'S PLACE IN NATURE

Origin of Man from an Egg—Like other Mammals—Development of the Embryo—Backbone—Eye and other Organs of Sense—Fish, Reptile, and Mammalian Stages—Comparison with Apes and Monkeys—Germs of Human Faculties in Animals—The Dog—Insects—Helplessness of Human Infant—Instinct—Heredity and Evolution—The Missing Link—Races of Men—Leading Types and Varieties—Common Origin Distant—Language—How Formed—Grammar—Chinese, Aryan, Semitic, etc.—Conclusions from Language—Evolution and Antiquity—Religions of Savage Races—Ghosts and Spirits—Anthropomorphic Deities—Traces in Neolithic and Palæolithic Times—Development by Evolution—Primitive Arts—Tools and Weapons—Fire—Flint Implements—Progress from Palæolithic to Neolithic Times—Domestic Animals—Clothing—Ornaments—Conclusion, Man a Product of Evolution.

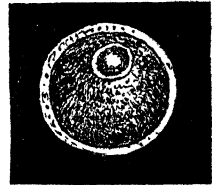
ALTHOUGH the establishment of the great antiquity of the human race has attracted more immediate attention, being a fact at once intelligible to the general public, the researches of anatomists and physiologists, aided by the microscope, have brought to light results quite as remarkable as regards the individual man and his place in Nature. Until recently it was taken for granted that man was a special miraculous creation, altogether superior to and distinct from the rest of the animal world. This assumption, gratifying alike to our vanity, and our laziness in the laborious search for truth, has been to a

great extent disproved and replaced by the Law of Evolution.

The most striking proof of this is found when we trace scientifically the growth of each individual man from his first origin to his final development. Man, like all other animals, is born of an egg. The primitive egg, or ovum, which was the first germ of our existence, is a small cell about the one-hundred-and-twenty-fifth of an inch in diameter, consisting of a mass of semi-fluid protoplasm enclosed in a membrane, and containing a small speck or nucleus

of more condensed protoplasm. This nucleated cell is itself the first form into which a mass of simple jelly-like protoplasm is differentiated in the course of its evolution from its original uniform composition. The nucleated cell is the starting-point of all higher life, and by splitting up and multiplying repetitions of itself in geometrical progression, provides the cell-material out of which all the complicated structures of living things are built up. In sexual generation, which prevails in all the higher forms of life, this process requires, in order to start it, the co-operation of two such cells or germs of life, one male, the other female.

The first remarkable fact is that the human egg is, at its commencement, undistinguishable from that of any other mammal, and remains so for a long period of its growth, going through its earlier stages of development in precisely the same way. At first the egg behaves exactly as any other single-celled organism, as for instance that of the amoeba, which is considered the simplest form of organised life. It contracts in the middle and divides into two cells, each with its nucleus and each an exact counterpart of the original cell. These two subdivide into four, the four into eight, and so on, until at last a cluster of cells is formed which is called a *morula* from its resemblance to the fruit of the mulberry-tree. Development goes on, and the globular lump of cells changes



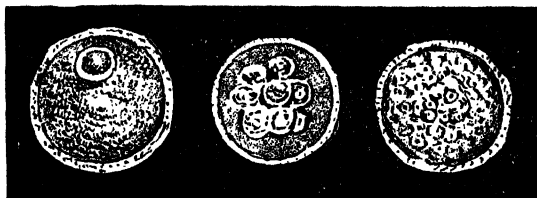
HUMAN Egg.
Magnified 100 times.

MODERN SCIENCE AND MODERN THOUGHT

into a globular bladder whose outside skin is built up of flattened cells. Then condensation takes place, from the more rapid growth of cells at particular points, and the foundation is laid of the actual body of the germ or embryo, the other cells of the germ-bladder serving only for its nutrition. Up to this point the germs not only of all mammals, including man, but of all vertebrate animals, birds, reptiles, and fishes, are scarcely distinguishable.

In the next stage the outer surface of the embryo develops three distinct layers, the outer one of which, or epidermis, is modified into the skin, sense-organs, and nervous system; the inner one, or epithelium, into the mucous membrane or lining of all the intestinal organs; while the intermediate layer is the raw material of muscles, bones, and blood-

pression in the outer skin extends until the edges close and form a hollow space in which the eye is formed. At first it is a mere black pigment mark on the interior surface of the enclosed space, which develops into the retina, with a wonderful apparatus of optic nerves for conveying impressions photographed on it to the brain. The enclosed space itself is filled with a fluid, or vitreous humour, from which a lens is condensed for collecting the rays of light and concentrating them on the retina, and by degrees all the beautiful and complicated organs are evolved for perfecting the work of the eye and protecting it from injury. But this fact must be kept clearly in view: the process is identically the same as that by which the eyes of other animals are formed, and its various stages represent those by which the



First Stage.

MAMMALIAN EGG.
Second Stage.

Third Stage.

vessels. The embryo is now contracted in the middle and assumes the form of a violin-shaped disc, and a slight longitudinal furrow appears, dividing it into two equal right and left parts, which is gradually converted into a tube containing the spinal marrow, to protect which a chain of bones or vertebrae is developed, forming the back-bone.

And now comes what is the most marvellous part of the process, viz., the development of the brain, eye, ear, and other organs of sense, from these simple elements. The brain begins as a swelling of the foremost end of the cylindrical marrow-tube. This divides itself into five bladders, lying one behind the other, from which the whole complicated structure of the brain and skull is subsequently developed.

The eye, ear, and other sense-organs, begin in the same way. A slight de-

velopment of a complete eye, in advancing from the lowest to the higher forms of life. Thus in the lowest, or Protista, the eye remains a simple pigment spot, which probably perceives light by being more sensitive to variations of temperature than the surrounding white cells. The next higher family develop a lens, and so on in ascending order, different families developing different contrivances for attaining the same object, but all starting from the same origin, development of the cells of the epidermis, and leading up to the same result, organs of vision adapted for the ordinary conditions of life of the creature which uses them. I say the ordinary conditions, for there are curious instances of the eye persisting, dwindling from disuse, and finally disappearing, in animals which live underground like the

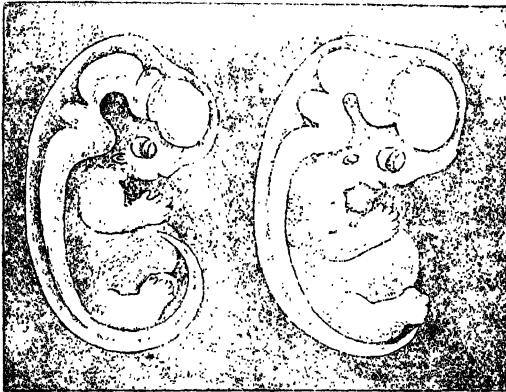
MAN'S PLACE IN NATURE

moles, or in subterranean waters like some fish in the Mammoth Cave of Kentucky and underground lakes of Carinthia, where the stimulus of light is no longer felt for many generations.

The history of the ear and other organs of sense is the same as that of the eye. They are all developments of the cell system of the outer skin, and all pass through stages of development identical with those at which it has been arrested in the progression from lower to higher forms of life. The same principles apply to the development of the inner organs, such as the heart, lungs, liver, etc., a striking illustration of which is found in

of development remains the same as that of other mammalia. The rudimentary limbs are exactly similar, the five fingers and toes develop in the same way, and the resemblance after the first four weeks' growth between the embryo of a man and a dog is such that it is scarcely possible to distinguish them. Even at the age of eight weeks the embryo man is an animal with a tail, hardly to be distinguished from an embryo puppy.

As evolution proceeds, the embryo emerges from the general mammalian type into the special order of *Primates* to which man belongs. This order, beginning with the lemur, rises through



Dog (six weeks).

Man (eight weeks).

From Haeckel's "Schöpfungsgeschichte."

the fact that the gill arches, or bones which support the gills by which fishes breathe, exist originally in man and all other vertebrate animals above the ranks of fish, but, in the development of the embryo, they are superseded by the air-breathing apparatus of lungs, and converted to other purposes in the formation of the jaws and organ of hearing. In fact, we may say that every human being passes through the stage of fish and reptile before arriving at that of mammal, and finally of man.

If we take him up at the more advanced stage, where the embryo has already passed the reptilian form, we find that for a considerable time the line

the monkey, the baboon, and tailed ape, up to the anthropoid apes, the chimpanzee, gorilla, orang, and gibbon, which approach nearest to the human type. The succession is gradual from the lower to the higher forms up to the anthropoid apes, but a considerable gap occurs between these and man. It is true that in his physical structure man resembles these apes closely, every bone and muscle of the one having its counterpart in those of the other. But even at its birth the human infant is already specialised by considerable differences. The brain is larger, its convolutions more complex, the spine has a double curvature, adapting it for an erect posture, and the legs, with a

corresponding object, are longer and stronger, while the arms are shorter and less adapted for climbing. The thumb also is longer, making the hand a better instrument for all purposes, except that of clasping the branches of trees, for which the long, slender fingers of the ape are more available. The great toe also is less flexible, and the foot more adapted for giving the body a firm support and less for being used as a hand.

As growth proceeds after birth these differences become more and more accentuated. The infant chimpanzee is not so very unlike the infant negro, but after a certain age the sutures of the skull close in the former, making the skull a solid box, which prevents further expansion of the brain, and the growth of the bone is directed towards the lower part of the face, giving the animal a projecting muzzle, massive jaws, and a generally bestial appearance, while at the same time its intelligence is arrested and its ferocious instincts become more prominent. Still these higher apes remain creatures of very considerable intelligence and warm affections, as may be seen in the behaviour of those which have been caught young and brought up under the influence of kind treatment. There is a chimpanzee now¹ in the Zoological Gardens at Regent's Park, which can do all but speak, which understands almost every word the keeper says to it, and when told to sing will purse out its lips and make an attempt to utter connected notes. In the native state they form societies, obey a chief, and often show great sagacity in their manner of foraging for food and escaping from danger.

Even in lower grades of life than the anthropoid apes we can see plainly many of the germs of human faculties in an undeveloped state. Those who are fond of dogs, and have lived much with them and understood their ways, must have been struck by the many human-like qualities they possess, and especially by the very great resemblance between young dogs and young children. They both like and dislike very much the same people and the same mode of treatment. They like those who take notice of them, caress them, talk to them, and, above all, those whom they can approach with por-

fect confidence of receiving uniform kind treatment. They dislike those who have no sympathy with them, or whose treatment of them is either cold or capricious. Their great delight is to play with one another, and often to tease and make a pretence of quarrelling and fighting. Both have an instinct for mischief, and are constantly trying it on how far they can go without getting into serious difficulties.

Later in life, and in more serious matters, the dog has certainly the germs of higher intelligence, and does a number of things which require a certain exercise of reasoning power. He has a good memory, and imagination enough to be excited at the prospect of a walk where there is a chance of finding a rat or a rabbit, and to dream of chasing imaginary rabbits when he is lying curled-up on the hearthrug. Every dog has an individual character of his own as clearly defined as that of an individual man, nor can the rudiments of reasoning be denied to the hound who, in a kennel of twenty others, knows perfectly well that he is Rover, and not Rattler or Ranger, and waits till his name is called to come forward for a biscuit. When he has got it, his sense of property makes him appropriate it as his own, and respect the biscuits appropriated to other dogs, at any rate to the extent of knowing perfectly well that he is doing wrong if he takes them by force or steals them.

In moral qualities the dog approaches even more closely to man. His fidelity, affection, and devotion even to death, are proverbial. He feels shame and remorse when he has departed from the canine sense of right and wrong or from the canine standard of honour, and is happy when he feels that he has done his duty. What is this but the working of an elementary conscience? Even in the higher sphere of religious feeling, the dog feels unbounded love and reverence for the master who is the highest being conceivable to him, or in other words, his God; and he shudders as that master does in the presence of anything weird and supernatural. Every good ghost story begins by describing how the dogs howled and cringed at their master's feet when the first shadow of supernatural presence was cast on the haunted castle.

Capacity for progressive improvement

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can hardly be denied to a race which has developed such qualities from ancestors who, like the wild and half-wild dogs of Asia and America, had not even learned to bark, and were as unlike the civilised and affectionate collie as Paleolithic man to his modern successor. In fact, the progress of the dog seems only to be limited by the want of organs of speech, and of an instrument like the hand by which to place himself in closer relation with the outer world.

The same remarks apply to the elephant, whose great sagacity seems clearly attributable to the possession of such an instrument in the trunk, inferior no doubt to the hand, but still very superior to the paw of the dog or to the hoof-enclosed fore-foot of the horse. In all animals the greater or less perfection of the instruments by which they act upon and are acted upon by the outer world, seems to be the principal factor in determining the quality of the brain as an organ of intelligence.

In the insect world we find still more wonderful exemplifications of the resemblance between animal and human intelligence. Ants live in organised societies, build cities, store-up food for winter, keep aphides as milk-cows, carry on slave-hunting raids, and push the division of labour to such an extent that some tribes are all workers, others all warriors and slave-owners. These actions are not all merely mechanical and instinctive, for ants can to a considerable extent adapt themselves to circumstances, and alter their habits and mode of life when it becomes necessary in the "struggle for existence." The same is true of bees, beetles, and other insects, but it is useless to dwell on these, for the organisation of the insect world is so different from that of the mammalian, to which man belongs, that no safe analogy can be drawn from one to the other. It is from the higher mammalian types that we can fairly draw the inference that, if like effects are produced by like causes, the more perfect intelligence and morality of man must be the same in kind though higher in degree than the less perfect manifestations of the same qualities in animals of similar though less perfect physical organisation.

There is one respect in which the human infant differs greatly from the

young of other animals, viz., in the long period for which it remains in a condition of utter helplessness. In many of the lower forms of life the young creature emerges into the world with many of its necessary faculties complete, and has to learn comparatively little from education. The chicken runs about and picks up food on the day it escapes from the egg, and the young flycatcher, while fragments of the shell still adhere to it, will peck at flies. As we rise in the scale of creation, these instinctive aptitudes become fewer, and more time is required before the young animal can shift for itself; till at length, in the human infant, we arrive at a stage where for some time it can do little to preserve its existence except to breathe and suck.

The reason of this is doubtless to be found in the higher development which it is destined to attain. The faculties of every animal depend on two causes—first, heredity, or those which have been evolved from the type, and become fixed by succession through a long series of ancestors; secondly, adaptation, or those which are acquired by education; including in the term everything that is requisite to place the animal in harmony with its surrounding environment. The first are what are called instincts, which exist from the birth, and are preserved unconsciously and without an effort. The last involve an effort, and reference from the outer stations of the senses along the telegraph wires called nerves, to the central office of the brain, where the message is recorded and the reply considered and transmitted along another set of nerves to the muscles, where it translates itself into action. In either case the fundamental fact seems to resolve itself into a tendency of molecular motion to follow beaten rather than unknown paths. What the brain has once thought or perceived, it will think or perceive more readily a second time, and in like manner, a message which has once been transmitted and read off along a nerve, from muscle to brain or from brain to muscle, will be transmitted and read off more readily by practice, until at length it ceases to require conscious effort and becomes instinctive. We may see an illustration of this in the facility with which a piano player, who began by learning the notes with difficulty,

requires such aptitude that the execution of rapid passages becomes mechanical, and can be carried on without a mistake, even when the performer is thinking of something else or talking to a bystander.

The outer world with which every animal has to deal from its birth upwards may be compared to a dense forest or jungle through which it has to find its way. A certain number of paths have been cut by its ancestors, and it finds them ready made by heredity; others it constructs for itself by repeated efforts until they become as broad and easy as those which it inherited; and finally, if the forest is thick and its area extensive, it can only be explored by leaving the beaten paths of inherited or acquired instinct, and groping the way painfully by conscious effort and attention.

We can now see why the lower the animal, or in other words the less extensive the forest, the whole vital energy may be concentrated on the few beaten paths opened by heredity, and a few necessary actions may be performed from the first, instinctively and with great perfection, while in higher organisms the vital energy is employed in developing a great mass of future possibilities rather than a small number of inferior present realities. The baby cannot run about the room and feed itself like the chicken, because the baby has to grow into a man or woman, while the chicken has only to grow into a fowl which can do very little more in its adult than in its infant state.

In fact, when we come to analyse the sum of faculties of the adult man, we find that they are derived to a surprisingly small extent from heredity as compared with education. In saying this, however, it must be understood that the term "heredity" is limited to that direct heredity which transmits characters by instinctive necessity, and not to the far larger sphere of indirect heredity by which faculties, arts, modes of thought, and rules of conduct, are accumulated in civilised societies, and become the principal instrument of education in its larger sense. If it were possible to suppose a human infant, born of civilised parents, left entirely to itself, what would it grow into? It would have the physical characters and advantages of its human ancestry which heredity transmits; bipedal movement, large, convoluted brain with potential capacities;

aptness of hand and opposable thumb; but its solitariness would be fatal to its progress. It would not learn to speak, in the sense of using any articulate language; its arts might not extend beyond recognising a few articles of food, and perhaps using stones to crack nuts, and constructing some rude shelter from branches of trees. It would know nothing of fire, and on the whole it would not be so far advanced as its oldest Palaeolithic ancestor.

As regards a moral sense, and all that we are accustomed to think the highest attributes of humanity, it is clear that its mind would be a blank. Even at a much more advanced stage, such ideas evidently come from education, and are not the results either of inherited instinct or of supernatural gift. An English child kidnapped at an early age by Apache Indians or head-hunting Dyaks, would, to a certainty, consider murder one of the fine arts, and the slaughter of an inoffensive stranger, especially if accomplished with a treachery that made the exploit one of little risk, an achievement of the highest manhood. If brought up among Mahometans he would consider polygamy, if among the Todas polyandry, as the natural and proper relation of the sexes. All that can be said is, that if recaptured and brought back to civilised society, he would perhaps be assisted by heredity in adopting its ideas more readily than would be the case if he had been born a savage.

It is clear, therefore, that the history of the individual man tells the same story of evolution from low beginnings as is told by that of the human race as traced from Palaeolithic, through Neolithic, into modern times. His law is progress, worked out by conscious effort called forth by the environment of outward circumstances, and accelerated from time to time by the successful efforts of a few superior men, whose greater sum of energy or happier organisation for development, enables them to pioneer new paths through the vast unexplored forests of science, art, and morality.

The difficulty of accounting for the development of intellect and morality by evolution is not so great as that presented by the difference in physical structure between man and the highest animal. Given a being with man's brain and man's hand and erect stature, it is easy to see

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how intelligence must have been gradually evolved, and rules of conduct best adapted for his own good and that of the society in which he lived must have been formed and fixed by successive generations, according to the Darwinian laws of the "struggle for life" and the "survival of the fittest."

But it is not so easy to see how this difference of physical structure arose, and how a being who had such a brain and hand, and such undeveloped capabilities for an almost unlimited progress, came into existence. The difficulty is this: the difference in structure between the lowest existing race of man and the highest existing ape is too great to admit of the possibility of one being the direct descendant of the other. The negro in some respects makes a slight approximation towards the Simian type. His skull is narrower, his brain less capacious, his muzzle more projecting, his arm longer than those of the average European man. Still he is essentially a man, and separated by a wide gulf from the chimpanzee or gorilla. Even the idiot or *crétin*, whose brain is no larger and intelligence no greater than that of the chimpanzee, is an arrested man and not an ape.

If, therefore, the Darwinian theory holds good in the case of man and ape, we must go back to some common ancestor from whom both may have originated by pursuing different lines of development. But to establish this as a fact and not a theory we require to find that ancestral form, or, at any rate, some intermediate forms tending towards it. We require to find fossil remains proving for the genus man what the Hipparion and Anchitherium have proved for the genus horse, that is, gradual progressive specialisation from a simple ancestral type to more complex existing forms. In other words, we require to discover the "missing link." Now it must be admitted that hitherto, not only have no such missing links been discovered, but the oldest known human skulls and skeletons show no very decided approximation towards any such pre-human type. On the contrary, one of the oldest types, that of the men of the sepulchral cave of Cro-Magnon, is that of a fine race, tall in stature, large in brain, and on the whole superior to many of the existing races of mankind. The reply of course is that

the time is insufficient, and if man and the ape had a common ancestor then as a highly developed anthropoid ape certainly, and man probably, already existed in the Miocene period, such an ancestor must be sought still further back, at a distance compared with which the whole Quaternary period sinks into insignificance. It is said also that the discovery of man's antiquity is of quite recent date, and that fifty years ago the same negative evidence was quoted as conclusive against his existence in times and places which now afford his remains by tens of thousands. All this is true, and it may well make us hesitate before we admit that man, whose structure is so analogous to that of the animal creation, whose embryonic growth is so strictly accordant with that of other mammals, and whose higher faculties of intelligence and morality are so clearly not miraculous instincts but the products of evolution and education, is alone an exception to the general law of the universe, and is the creature of a special creation.

This is the more difficult to believe, as the ape family, which man so closely resembles in physical structure, contains numerous branches which graduate into one another, but the extremes of which differ more widely than man does from the highest of the ape series. If a special creation is required for man, must there not have been special creations for the chimpanzee, the gorilla, the orang, and for at least 100 different species of apes and monkeys which are all built on the same lines?

What are the facts really known to us as to man, his nature, and his origin?

Man is one of a species of which there are in round numbers, according to the computations of Wagner and Supan, some 1,480 millions of individuals living at the present time on the earth. Taking thirty years as the average duration of each generation there are thus over 3,600 millions who are born and die per century, and this has gone on more or less during the period embraced by history, which extends for a great part of the Old World over thirty centuries, in the case of Babylonia perhaps over ninety, and in Egypt certainly over seventy centuries. At the commencement of these historical periods population was dense, probably in Egypt and Western Asia denser than at

present, and civilisation far advanced. The Pyramids, which are among the oldest and the largest buildings in the world, prove this conclusively, both from the mechanical skill and astronomical science shown in their construction, and from the great accumulation of capital and highly artificial arrangements of society which could alone have rendered such works possible. The great mass of the population in these times lived in what is known as the Old World, and was accumulated mainly in the great valley systems of the Nile, and of the various rivers and irrigated plains of the southern half of the continent of Asia. Northern Asia and Europe were thinly inhabited by ruder tribes. Of America and the interior of Africa we know little until a much later date, but the population was in all probability sparse and savage; in Australia, it was still scantier and more savage; while in New Zealand and most of the Pacific Islands it has been introduced by migration only within comparatively recent times.

The next leading fact we have to observe is that the human race is not everywhere the same, but is divided into several well-marked varieties. The most obvious distinction is that of colour. In the Old World there are three distinct and clearly characterised groups—the white, the yellow, and the black. These are found mainly in three separate zoological provinces: the white in the temperate and north-temperate zones of Europe and Western Asia, the yellow in those of Eastern Asia, and the black in the tropical zone, principally of Central Africa. Where they are pure and unmixed, these race-types differ from one another not in colour only but in many other important and permanent characters. The average size of the brain, the complexity of its convolutions, the shape of the skull, the bones of the face and jaws, the comparative length of the limbs, the structure of the hair and skin, the characteristic odour, the susceptibilities to various diseases, are all essentially different, so that no observant naturalist, or even observant child or dog, could ever mistake a Chinaman for a Negro, or a Negro for an Englishman.

Such a naturalist, seeing for the first time typical specimens of the three races, would pronounce them without hesitation to be distinct species, and would

predict with much confidence that they would either not cross, or, if they did, would produce a hybrid progeny of inferior fertility.

But here he would be wrong, for, in fact, the most opposite races breed freely together, and produce a fertile progeny.

Moreover, when we extend our view beyond the clearly distinguished types of the white, yellow, and black, as seen in Caucasian, Mongoloid, and Negro races, we find these types breaking off into sub-types and shading off towards each other, while a large proportion of the human race consists of brown, red, olive, and copper-coloured people, who may either be original varieties, or descended from crosses between the primitive races. Small isolated groups differing from the main races also crop up, of whom it is hard to say from whom they are descended or how they got there: as for instance the Hottentots, in South Africa; the pigmy black Negritos of the Andamans and other South Asiatic islands; the Papuans and Australians; the so-called hairy Ainos of Japan, and some of the aboriginal races of India.

To a certain extent climate seems to have had an influence in creating or developing the main typical differences. Thus the main line of black races lies along the hot tropical belt of the earth from Old to New Guinea. But the rule is not universal, there is no similar type in tropical America, where a singular uniformity of type and colour prevails throughout the whole continent. Even in Africa we find the Negro type, while retaining its black colour, shading off towards higher types and losing its more animal-like characteristics. Again, colour, the origin of which remains a perplexing problem to the physiologist, becomes generally lighter as we pass from tropical to south-temperate and from south to north-temperate regions, probably because the skin needs less protection from the sun's rays which the pigmentation affords. The exceptions supplied by the Esquimaux may be due to their having six months' unbroken sunlight, and by the now extinct Tasmanians to their migration from tropical regions.

Even within great and well-defined races themselves there are clearly marked varieties. Thus the white race consists of the two distinct types of the fair-whites and dark-whites, the former prevailing in

Northern Europe and the latter in Southern Europe, Western Asia, and North Africa; the contrast between a fair Swede with flaxen hair and blue eyes, and a swarthy Spaniard with black hair and eyes, being almost as marked as between the latter and some of the higher black or brown races. Throughout a great part of Europe, including specially England, it is evident that the existing population is derived mainly from repeated crosses of these two races with one another and probably with earlier races.

In the existing state of things also it is evident that if the different races of mankind ever really did pass into one another under influences like those of climate, the time of their doing so is long past. A colony of English families transported to tropical Africa would to a certainty die out long before they had taken even the first step towards acquiring the black velvety skin, the woolly hair, the projecting muzzle, and the long narrow skull of the typical Negro, while a Negro colony transported to Scotland or Scandinavia would as certainly disappear from diseases of the chest and lungs, long before they began to vary towards the European type. The yellow race seems to be on the whole the best fitted to withstand climate and other external influences, and it certainly shows no signs anywhere of passing over either into the Caucasian or the Negro type.

On the whole, therefore, if the fact of fertile inter-crossing is to be taken as proving the unity of the human race and their probable descent from a common ancestor, and we are to assume that all the great varieties which we find existing are the result of modifications gradually introduced by climate and surrounding circumstances, it is evident that the point of divergence must be put at an immense distance.

This is the more certain, as when we look back for a period of more than 4,000 years, we find from the Egyptian monuments that some of the best-marked existing types have undergone no sensible change. The portraits of negroes and of Semitic dark-whites painted on the walls of temples and tombs of the 12th dynasty, about 2,000 B.C., might be taken as characteristic portraits of the negro and Jew of the present day, and the modern Egyptian fellah reproduces with little or no change the features of the ancient Egyptians of the days of Rameses and Ameno-

phis. It is evident, therefore, that where no great change has taken place from crossing of races, they will maintain their special characters unaltered for more than 100 generations. Indeed we might say for 200 generations, for the statues and wooden statuettes from the tombs of Sak-kara, the ancient Memphis, which certainly date back for more than 5,000 years, show us the Egyptian type in its highest perfection, and with a more intellectual and I might say modern expression than is found 1,000 or 2,000 years later, when the type of the higher classes had evidently deteriorated somewhat from a slight infusion of African elements.

The same conclusion of the great distance at which any common point of divergence of the various races of mankind must be placed, is confirmed by a totally different line of inquiry, that into the origin of language.

Philologists have clearly proved that languages did not spring into existence ready made, like Minerva from the brain of Jupiter, but have followed the general law of Nature, and have had their periods of birth, growth, and evolution from simple into complex organism. Now there is a vast variety of languages, some say more than a thousand. A large proportion of these are, of course, only what may be called dialects of the same original language, as in the case of the whole Indo-European family, including Sanscrit, Zend, Greek, Latin, Teutonic, Celtic, and Slavonic, with all their offshoots and derived branches, as well as many others. Any one who wants to be convinced of this has only to refer to Max Müller's works and trace the history of one verb, viz., that used to denote individual existence.

Asmi in Sanscrit has become *eimi* in Greek, *sum* in Latin (whence *sono*, *suis*, and all the modern derivatives of Latin races), and "am" in English; while the Latin *est*, the Greek *esti*, and the German *ist*, are clearly akin to the original *asti*. It may help in understanding how language has been formed if we point out that "I am" originally meant "I breathe," and "he is" is the more general and abstract form of "he stands."

But there are a number of languages between which no such relationship can be traced, which are constructed on radically different principles, and have no resemblance with one another in their roots, or primitive sounds used to express

objects and simple ideas, except in the few cases where it can be traced to importation from abroad, or to imitation of naturally suggested sounds, such as those which have led so many nations to express the idea of "mother" by a sound resembling the bleating of a lamb. Obviously, similarity of sound in such words as are used for the ideas of father, mother, cow, crow, thunder, crack, splash, and so on, suggests no common origin, and as most, or at any rate a great many roots, were probably derived originally in this manner, though long since diverted to express other ideas by associations which it is impossible to trace, the wonder rather is that we should find so many languages with so few roots in common. The best authorities tell us that a list of fifty to one hundred languages could be made of which no one has been satisfactorily shown to be related to any other.

The main distinction between languages, however, is to be found in their inner mechanism, or grammar, rather than in the mere difference of root-sounds. The result of years of mechanical training in barbarous Latin and Greek grammars in our English public schools has been to leave the average Englishman completely ignorant of the real meaning of the word "grammar," and almost incapable of comprehending that it can mean anything else than a string of arbitrary rules to be learned by heart for the vexation of small boys.

And yet grammar is really most interesting, as showing the modes by which the dawning human intellect has proceeded, at remote periods and among different races, in working out the great problem of articulate speech, by which man rises into the higher regions of thought and is mainly distinguished from the brute creation. Consider first what the problem is, and then some of the principal modes which have been invented to solve it.

Suppose some primitive race to have accumulated a certain stock of root-words, or simple sounds to signify definite objects and simple ideas, they must soon find that these alone are not sufficient to convey briefly and clearly to other minds the ideas which they wish to express. For instance, suppose a tribe had got root-words to express the ideas of "man," "bear," and "kill." What one of the

tribe wants to convey from his own mind to that of his neighbour may be "The man has killed the bear," or "The bear has killed the man," or "The" (or "A") man has killed a bear," or "bears," or "will" or "may have" killed, and so on through a vast number of variations on the original three-note theme. Up to a certain point, a man might succeed in making himself understood by using his three root-sounds in a certain order, aided by the pantomime of accent and gesture; and the Chinese, though one of the oldest civilised peoples of the world, have scarcely got beyond this stage. But the process would be difficult and uncertain, and at length it would occur to some genius that such modifications as those of definite and indefinite, past and present, singular and plural, etc., were of general application, not to the particular three or four roots which he wished to connect, but to all roots. The next step would be to invent a set of sounds which, attached in some way to the root-sounds, should convey to the hearer the sense in which it was intended that he should take them.

This is the fundamental idea of grammar, but it has been worked out by different races in the most different manner. The Chinese and other allied races in the South-east of Asia, such as the Burmese and Siamese, have solved it in the simplest manner. Their languages are what is called monosyllabic—that is, each word consists of a single syllable, and is a root expressing the fundamental idea, without distinction of noun from verb, active from passive, or other modifications. They have to trust, therefore, to express their meaning, mainly to syntax, or the order in which words succeed one another, which, up to a certain point, is the simplest method, and is largely adopted in modern English. Thus, "Man kill bear," "Bear kill man," convey the meaning just as clearly as the classical languages do by cases, when they distinguish whether the man is the killer or the killed by saying *homo* or *hominem*. But the monosyllabic system limits the nations who use it to an inconveniently small number of words, and fails in expressing their more complex relations, so that we find the same word in Chinese or Siamese often expressing the most different ideas, and the meaning can only be conveyed by supplementing the root-words and syntax by accent and other

conventional signs which are akin to the primitive devices of gesture language. Thus, in Siamese, the syllable *ha*, according to the note in which it is intoned, may mean a pestilence, the number five, or the verb "to seek."

*This very primitive and almost infantine form of language is confined to one family, that of the Chinese and Indo-Chinese, who, it may be observed, are by no means simple or primitive in other respects, but stand and have stood for centuries at a comparatively high level of civilisation. All other races, including the most savage, have adopted some form or other of grammar, i.e., of modifying original root-sounds by additional generic sounds of definite determination; but the devices on which they have hit for this purpose are most various. Thus, the grammar of the Aryan family of languages has been formed by reasoning out such general categories of thought as articles, pronouns, and prepositions, coining sounds for them and prefixing these sounds to the root-sounds as separate determinating signs. More complex shades of meaning are conveyed principally by inflections, i.e., by adding certain generic new sounds to the original root-word, and incorporating them with it so as to form modifications which are a sort of secondary words. Thus the ideas of present, past, and future love, loving, and being loved, lovely, and so on, are formed by transforming the root *amo* into such modifications as *amor*, *amari*, *amabo*, *amans*, *amabilis*, etc. We can see this process in the course of formation in the change which converted the old English form "Cæsar his" into the modern genitive "Cæsar's."

Other families again obtain the same results by very different processes. The Semitic languages, for instance, including Hebrew, Arabic, Assyrian, and Phœnician, are what is called "triliteral," i.e., they consist of roots mostly of three consonants, and express different shades of grammatical meaning by altering the internal vowels. Thus, from the root *m-l-k* are derived *melek*, a king; *malak*, he reigned, and so on.

The so-called Turanian family, comprising Huns, Turks, Finns, Lapps, and other Mongolian races of Northern Asia, all speak agglutinative languages, i.e., languages in which the root is put first and is followed by suffixes strung on to

it, but not incorporated with it and remaining distinct. Thus in Turkish, the root *sev*, to love, is expanded into *sevishdirilmekteler*, meaning "incapable of being brought to love one another."

These are only given as specimens of some of the most marked of the vast varieties of language which have been examined and classified by philologists. They suggest a great many interesting reflections, but I confine myself to those which bear more immediately on the subject of man's origin and development. It is evident that they imply great antiquity for the existence, not of man only, but of separate races of men speaking separate languages.

Babylonian inscriptions, estimated by Dr. Hilprecht to be 9,000 years old, show that the characteristic features of the Semitic languages were as clearly established then as they are now; and the hieroglyphics of Egyptian monuments, 7,000 years old, show the Coptic language essentially the same as modern Coptic, and although presenting some points of analogy with Semitic, too different to be classed with it. If these are descended from a common ancestor, clearly their origin must be extremely remote. And even with unlimited time it is difficult to conceive how such radical differences in the structure of languages could have arisen unless the different races had branched off before any clear form of articulate speech had become fixed. Could a race accustomed for generations to the free-flowing inflectional Aryan, have deserted it for the cramped forms of the Semitic, or, *vice versa*, could the Semite have adopted the modes of thought and expression of Sanscrit? And the same difficulty would apply in at least twenty or thirty cases of other families of language.

It must be recollected that language is not merely the conventional instrument of thought, but to a great extent its creator, and the mould in which it is cast. The mould may be broken, and races abandon old and adopt new languages by force of external circumstances, such as conquest or contact with and absorption by superior races, but there is no instance of its being so transformed from within as to pass into a totally different type. Nor can we very well see how root-words once attached to fundamental ideas, such for instance as the simpler numerals, should come to be

forgotten and new and totally different words invented.

Of course, the explanation was easy in the olden days, when everything was referred to miracle. Languages were different because God, to baffle the attempt of united mankind to build a tower high enough to reach to heaven, had made them so. But the theory of special miraculous creation for each language cannot stand a moment's investigation.

As in the case of the animal world, special creations, if admitted at all, must be multiplied to an extent which becomes absurd. Is every petty tribe of savages who speak a language unintelligible to others to be supposed to have had it conferred upon it as a miraculous gift? Was the language of the extinct Brazilian tribe, of which Humboldt tells us that a very old parrot spoke the last surviving words, one of the languages used to scatter the builders of the Tower of Babel? Or, still more conclusively, where we know and can prove that one part of a language is the product of natural laws, can we assume that another part of the same language is the result of miracle? Did it require Divine inspiration to make the old Egyptians call a cat *miaou*, or to teach so many nations to express the idea of mother by imitating the bleating of a lamb? If not, why should half the words in a dictionary be miraculous and half natural?

And if Cæsar is correctly reported to have been more proud of discovering a new case than of conquering Gaul, ought we not to "render unto Cæsar the things that are Cæsar's," and assign grammar as well as words to human invention? In short, no reasonable man who studies the subject can doubt that language is just as much a machine of human invention for communicating thought, as the spinning jenny is for spinning cotton.

The general conclusion, then, to be drawn from the study of language points in the same direction as that of all other branches of science, viz., that their true history is that of evolution from simple origins by the operation of natural laws over long periods of time into forms of greater complexity and higher development. What language really does for us is to take up the thread where the oldest history fails us, and show that even at this date it is impossible to doubt that

the human race must have been already in existence for a very long period, and in existence as at the present day in several sharply distinguished varieties, so that the common origin, if there be one, must be placed still further back. As history verified by the Babylonian monuments extends over a period of, say, nearly 9,000 years, this is equivalent to saying that such a period can only be a very small part of the total time which has elapsed since man became an inhabitant of the earth.

The origin and development of religions have been much discussed, but too often with a desire to make theories square with wishes. The subject also does not admit of such precise determination as in treating of arts and languages, which have left traces of themselves in the form of primitive implements and primitive roots.

The history of religions really begins with written records, or, at the earliest, with the older myths which are embodied in these records. But these are all comparatively modern, and imply a considerable progress in civilisation before they could have existed. If we wish to form some idea of what may have been the primitive elements from which religion was evolved during the long Neolithic and still longer Palæolithic periods which preceded history, we must look at what are actually the religious ideas of contemporary savage and semi-barbarous races.

As we rise above the level of the lowest savagery we find ideas of religion beginning to grow from two main tap-roots. One is the idea of ghosts or spirits, which arises naturally from dreams and visions and develops itself into ancestor and hero-worship, and belief in a world of spirits, good and evil, influencing men's lives and fortunes, and in many forms of sickness taking possession of their bodies. This spirit-worship also necessarily leads to some dim perception of a future life.

The other tap-root is the inevitable disposition to account for the phenomena of nature, when men first began to reflect on them, by the agency of invisible beings like themselves; in other words, of anthropomorphic gods. Perhaps this is a higher and later stage of religious belief than the former, for it implies a certain disposition to inquire into the causes of things and a certain amount of reasoning

power to infer like causes from like results.

But the two often blend together, as in the religions of the Aryan-speaking peoples, in which we see deified heroes and ancestors crowding the courts of Olympus, with a multitude of anthropomorphic gods, who are often merely obvious personifications of natural phenomena or astronomical myths. Thus, Varuna, Ouranos, or Uranus, are said to be personifications of the vault of heaven; Phœbus, the shining one, of the sun; Aurora, of the dawn; while Hercules is half deified hero and half solar myth. Sometimes, however, of the two stems of religion one only has flourished, and the other has either never existed, or been overshadowed by the first and relegated to a lower sphere. Thus the great Chinese civilisation, comprising such a large portion of the human race, has apparently developed its popular religion from the idea of spirits and spirit-worship. The worship of ancestors is its main feature, and its sacred books are, in effect, treatises on ethics and political economy, with rules for rites and ceremonies to enforce decent and decorous behaviour, rather than what we should call works of religion.

With other races again, and specially the Hebrew, the idea of a tribal anthropomorphic God has gradually swallowed up that of other gods, developed into that of one Almighty Being, and dwarfed that of ghosts and spirits. Their primitive God was anthropomorphic, and modelled on the idea of an Oriental sultan—sometimes good and beneficent, but sometimes cruel and capricious, and above all jealous of any disrespect and enraged by any disobedience. Morality seems at first to have had little or nothing to do with these conceptions, and there is not the remotest trace in the early history of any religion, of its having been born ready-made from the necessary intuition of one Almighty God of love, mercy, and justice, which is so confidently assumed by many metaphysicians and theologians. On the contrary, conscience had to be first evolved, and the process may be followed step by step by which, as manners became milder and ideas purer, the grosser attributes of Deity gradually yielded to the idea of a just and merciful God.

These considerations, however, lead us

far from the question of the first dawn of religion among primitive man. Judging from the earliest facts of history, and the analogy of modern savage races, we might look for the first traces of religious ideas from the contents of tombs and from idols. When a tribe had attained to some definite idea of a future life it would almost certainly bury weapons and implements with its dead, as is the case with modern savages. When it had reached the stage of worshipping anthropomorphic deities, it would probably frame images of them, some of which would be found in their tombs and dwellings.

The latter test soon fails us. In the early Egyptian tombs, and in the remains of the prehistoric cities excavated by Dr. Schliemann, images of owl and ox-headed goddesses, and other symbolical figures or idols, are found in abundance. But when we ascend into Neolithic times, such idols are no longer found, or, if found, it is so rarely that archaeologists still dispute as to their existence. Certain crescents found in the Swiss lake-dwellings were at one time thought to indicate a worship of the moon, but the better opinion seems to be that they were used as rests for the head during sleep, as we find similar objects now used in many parts of the world. Among the many thousand objects recovered from these Swiss lake-dwellings and other Neolithic abodes, there are only a very few which may possibly have been rude idols or amulets, and the only ones which may be said with some certainty to have been idols, are one or two discovered by Mons. de Braye in some artificial caves of the Neolithic period, excavated in the chalk of Champagne, which appear to be intended for female figures of life size with heads somewhat resembling that of the owl-headed Minerva.

When we pass to Palæolithic times the evidence of idols becomes more faint, and rests solely on the slender conjecture that some of the figures carved by the Reindeermen of La Madeleine and other caves, may probably have been intended for amulets. As they were skilful carvers, and fond of drawing whatever impressed itself on their imagination, the presumption is strong that they had not advanced to the stage when the worship of gods symbolised by idols had come into existence, as otherwise more undoubted idols must have

been found in the caves which were so long their habitations, and which have yielded such a number of remains of works of art.

The evidence for a belief in a future existence and in spirits is more conclusive. Throughout the whole Neolithic period we find objects which were evidently intended for use in a future life buried with the dead. We find also in many Neolithic tombs a singular fact which points to the existence of a very long belief in evil spirits. Many of the skulls, especially of young people, have been trepanned, that is, a piece of the skull has been cut out, making a hole, apparently, to let out the evil spirit which was supposed to be causing epilepsy or convulsions; and where the patient had recovered and the wound healed, when he died long afterwards, a piece of the skull, including this trepanned portion, was sometimes cut out and used apparently as an amulet. The objects deposited in graves show that the idea of a future life, as with most savages of the present day, was that of a continuation of the same life as he had led here, though perhaps in happier hunting-grounds. In some cases a great chief seems to have had wives and slaves slaughtered and buried with him, though the proofs of this are more clear and abundant in later times than during the Neolithic period. Cannibalism, however, seems to have occasionally prevailed both in Palæolithic, Neolithic, and prehistoric times, as it did so extensively among modern savage races before they came under civilising influences. This is clearly proved by the number of human bones, chiefly of women and young persons, which have been found charred by fire and split open for extraction of the marrow.

The evidence of belief in a future life becomes more rare and uncertain in Palæolithic times. Perhaps it may be because we have so few authentic discoveries of Palæolithic burying-places, and so many instances of caves, once inhabited by Palæolithic races, being used long afterwards as Neolithic sepulchres. After the famous cave of Aurignac it is difficult to trust any evidence as to the discovery of a real Palæolithic sepulchre which has not been subsequently disturbed.

In the few cases also where Palæolithic skeletons have been found, as in that of the men of Neanderthal and Mentone, they have often been those of single indi-

viduals, and it may be doubted whether they were buried there, or merely died in the caves in which they lived, in which case any implements found with them do not necessarily imply that they were placed there for use in a future life. On the whole it seems doubtful whether any certain proofs of burials denoting knowledge of a future life can be found in Palæolithic times, and if there are, they are certainly few and far between, and confined to the later stages of that period.

All we can say is, that religion certainly did not descend ready-made among these aboriginal savages, but that, like language, it was slowly developed from beginnings as rude as those we now find among the lowest races of savages.

It may be well, however, to say here, once for all, what is applicable to many other passages in this book, that the question of the origin of any religion is entirely different from that of its truth or falsehood. To explain a thing is not to disprove it; on the contrary, a thing only really becomes true to us when we understand it. A stately oak, with wide-spreading branches, that give shade and shelter to the cattle of the fields, is not the less a fact because we know that it did not drop ready-made from heaven, but grew from an acorn. The intrinsic truth of a religion must be tested by the conformity which, in a given stage of its evolution, it bears to the facts of the universe as disclosed by science, and to the feelings and moral perceptions which have been equally developed by evolution in the contemporary world.

All I contend for is, that all religions have grown and been developed from humble origins, and that their history, impartially considered, does not contradict, but on the contrary greatly confirms the law of natural evolution.

Of the two faculties by which man is commonly distinguished from the brute creation, viz., that of being the speaking and the tool-making animal, the former attribute has been shown to be the product of evolution from origins long since lost in the far-off distance of remote ages.

The same remark is even more certainly true as regards the other attribute of tool-making, or, in its widest sense, adapting natural laws and natural objects to the arts of life by intelligent application. The primitive roots, so to speak, of this

MAN'S PLACE IN NATURE

Industrial language, which in the case of spoken language for the most part elude our search, are here furnished by the Palæolithic remains found so abundantly in river drifts and caves. There can be no doubt whatever that the modern wood-cutter's axe and carpenter's adze are the lineal descendants of the rudely-chipped *haches*, or celts, which are dug out of the gravels of St. Acheul, or from below the stalagmite of Kent's Cavern. The regular progression can be traced from the mass of flint rudely chipped to a point, with a butt-end left rough to grasp in the hand, up to more symmetrical and carefully-chipped forms; to implements intended to be hafted or fastened to a handle; to implements ground and polished to a sharp edge and pierced for the handle; and finally to the finished specimens of the later Neolithic period, which exactly represent the adze and battle axe, and are almost identical with those used quite recently by the Polynesians and other semi-civilised races who had no access to metals. From these the transition to metals is easily traced, the first bronze implements and weapons being facsimiles of those of polished stone which they superseded, and the gradual development of bronze, and from bronze to the cheaper and more generally useful metal, iron, being a matter of quite modern history.

In like manner, the development of the knife, sword, and all cutting instruments, from the primitive flint-flake, can be traced step by step, and is beyond doubt; and equally so the development of all missiles, from the primitive chipped flint, used as a javelin or arrow-head, up to the modern rifle. When we catch the first glimpse of the beginnings of human art or industry, the furniture or stock-in-trade of Palæolithic man appears to have been as follows:

He was acquainted with fire. This seems to be clearly established by the charred bones, charcoal, and other traces of fire which are found in the oldest Palæolithic caves, and even in the far distant Miocene period, if we can believe in the flints discovered by the Abbé Bourgeois in the strata of Thenay, some of which appear to have been split by the action of fire. This is a remarkable fact, for a knowledge of the means of kindling fire is by no means a very simple or obvious attainment. Apes

and monkeys will sit before a fire and enjoy its warmth, but no monkey has yet developed intelligence enough even to put fresh sticks on to keep up the fire, much less to rekindle it when extinct. Præmortal man must often have had experience of fire from natural causes, as from forests and prairies scorched by a tropical sun being set on fire by lightning, or from volcanic eruptions; but how he learned from these to kindle fire for himself is not so obvious. Savage races, as a rule, do so by converting mechanical energy into heat, by the friction of a stick twirled round in a hole, or rubbed backwards and forwards in a groove in another piece of wood, and there are old observances among civilised nations which show that this was the mode practised by their ancestors, as when the sacred fire in the Temple of Vesta was relighted in this manner by the old Romans if it had chanced to be extinguished. It is probable, therefore, that this was the original mode of obtaining fire, but if so, it must have required a good deal of intelligence and observation, for the discovery is by no means an obvious one, nor is it easy to see any natural process that might suggest it.

Neither ancient history nor the accounts of existing savage races throw much light on the question. The narratives of the discovery of fire contained in the oldest records are obviously mythical, like the fable of Prometheus, which is itself a version of the older Vedic myth of the god Agni (cognate with Latin *ignis* or fire) having been taken from a casket and given to the first man, Manou, by Pramantha, which in the old Vedic language means taking forcibly by means of friction. Of the same character are the mythical legends of savage races of fire having been first brought by some wonderful bird or animal; and there is nowhere anything like an authentic tradition of the fact of its first introduction. There have been reports of savages who were unacquainted with fire, but they have never been well authenticated, and the nearest approach to such a state of things was probably furnished by the aborigines of Van Diemen's Land, of whom it is said that in all their wanderings they were particularly careful to bear in their hands the materials for kindling a fire, in the

shape of a firebrand, which it was the duty of the women to carry, and to keep carefully refreshed from time to time as it became dull.

On the whole, traditions all point to fire having been first obtained from friction, and it is possible that the first idea may have been derived from the boughs of trees, or silicious stalks of bamboos, having been set on fire when rubbed together by the action of the wind, or by the rubbing of the hands together.

It is easier to see the origin of the remaining equipment of primitive man, viz. chipped stones, for flints splintered by frost or fire often take naturally the forms of sharp-edged flakes and rude hatchets or hammers, and very little invention was required to improve these specimens, or endeavour to imitate them by artificial chippings. It is rather surprising that this art did not improve more rapidly, for it is evident that the old Palæolithic period must have lasted a long time before any decided progress began to show itself. And during this long period a singular uniformity appears to have prevailed throughout the Palæolithic world. The rude form of the celt or *hâche*, with a blunt butt and chipped roughly to a point, is found in the oldest river gravels and caves wherever they have been investigated, and the forms of the Somme and the Thames specimens are repeated in the quartzite implements of the Madras laterite.

In the very oldest caves and river deposits the tool-equipment of man seems to have been very much limited to these rude celts, used probably for smashing skulls in war and the chase, and splitting bones to get at the marrow; sharp-edged flakes for cutting; rude javelin-heads; and stones chipped to a rounded edge, very like those used by the Esquimaux for scraping bones and skins. As we ascend in time we find arrow-heads of stone and bone, at first unbarbed and gradually becoming barbed, showing that the bow had been discovered; harpoons of bone and fish-hooks; bone pins and needles; and a much greater variety and more carefully-chipped forms of flint tools and weapons; until we finally reach the upper reindeer stage of caves like that of La Madeleine, where artistic drawings and carvings are found, and the equipment generally is superior to that of many existing savage tribes, and

not much inferior to that of the Esquimaux and other Arctic races.

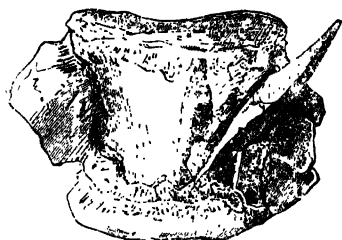
We then pass into Neolithic times, when many of the chief elements of civilisation are already in full force. Man has emerged in many localities from the hunter into the pastoral stage, the principal domestic animals are known, and in some of the later lake-dwellings he has advanced a stage further, and has become an agriculturist living in villages. From this to the Bronze and early historical periods, there is no great break, and the ruder tribes of barbarians described by Cæsar and Tacitus may well have been the lineal descendants of the Neolithic men whose polished axes and finely-shaped arrow-heads lie scattered over the surface of Europe and are found in innumerable burial-mounds and dolmens.

But in Palæolithic times, though we can see constant progress, mankind is still in a state of unmitigated barbarism. Agriculture was clearly unknown, for the hand-mills, pestles, and mortars, which are among the most enduring and abundant relics where grain was used for food, are never met with. Pottery was unknown in all the earlier periods, and it is questionable whether even the rudest forms of baked clay, moulded by hand, are found where there is no intermixture of a subsequent Neolithic habitation. The dog was clearly not a companion of man prior to the era of the Danish kitchen-middens, for the spongy parts of bones which are always gnawed by dogs when dogs are present, are invariably preserved in the *débris* of Palæolithic caves, and the few bones of dogs, wolves, and foxes found with human remains in these caves almost always show that the animals had formed part of the food of the inhabitants.

Other domestic animals were, in all probability, equally unknown, although it has been thought possible that some of the tribes of the reindeer period may have had herds of the half-tame deer, like the modern Laplanders. This conjecture, however, appears to rest solely on the large number of bones and horns found at certain stations, which may have arisen from their having been occupied for a very long period, and as the dog was unknown, it seems probable that no other animals had been domesticated.

As regards clothing, the first certain

DEVELOPMENT OF THE ARROW.



FLINT ARROW IN VERTEBRA OF REINDEER.
Palaeolithic. La Madeleine.



PALAEOLITHIC.
Mammoth Period. Le Moustier.



PALAEOLITHIC.
Reindeer Period.
First vestige of barb.



PALAEOLITHIC.
Reindeer Period.



PALAEOLITHIC
Reindeer Period.



NEOLITHIC.
Denmark.



NEOLITHIC.
Ireland.
(From Lubbock's "Prehistoric Times.")



NEOLITHIC.
Denmark.



PRESENT.
Esquimaux.

MODERN SCIENCE AND MODERN THOUGHT

proofs of its use are afforded by the bone pins and needles, which were evidently employed for fastening the skins of animals together, while the scrapers were used for scraping these skins and fashioning the bone implements. It is probable, therefore, that the use of skins as a protection against the cold of the Glacial period, was known at a very early period.

Ornaments, also, are of very early date. Perforated shells, sometimes fossil, and pierced teeth of the bear and other animals are frequently found under circumstances which show that they must have been strung together as necklaces. The skeleton found in a cave at Mentone had a number of perforated shells of *Nassa*, and a few stags' teeth also perforated, dispersed about the skull, evidencing that they had formed some sort of head ornament. Lumps of red hematite, also, probably used for paint, have been found in some of the caves of the reindeer period.

Captain Cook's description of the savages of *Tierra del Fuego* would have appealed to the men of that period, "although content to be naked, they were very ambitious to be fine;" and probably like these poor Fuegians, they adorned themselves with streaks of red, black, and white, and wore bracelets and anklets of shell and bone.

If we wish to form some ideas of the manners and customs of our Palaeolithic ancestors, we must look for them among existing savage races whose mode of life, and equipment of tools and weapons, most nearly resemble those of the earliest cave-dwellers. The Australians, the Bushmen of South Africa, the Mincopies of the Andaman Islands, and the Fuegians are probably the lowest specimens of the human race known in modern times; but even these are in some respects further advanced in the arts than Palaeolithic man. The Bushmen are skilled in the use of the bow, and have discovered the art of poisoning their arrows. The

Australians, Mincopies, and Fuegians have canoes, harpoons, and fish-hooks. The latter approach more nearly to the conditions of life of the savages who accumulated the kitchen-middens on the coasts of Denmark at a much later period, and the Bushmen probably represent those of the cave-men who lived principally on the produce of the chase of large animals, such as the mammoth, rhinoceros, cave bear, horse, and deer. The pigmy Bushman will attack the elephant, the rhinoceros, and even the lion, and often succeed in killing them by pitfalls or poisoned arrows.

The inferences, therefore, to be drawn, alike from the physical development of the individual man, and from the origin and growth of all the faculties which specially distinguish him from the brute creation—language, religion, arts, and science—point to the conclusion that he is a product of laws of evolution, and not of special or miraculous creation.

Still, granting this, we must admit on the other hand, that until more of the "missing links" are discovered, and the origin of man thus placed on a basis of scientific certainty, there is an opening left for the belief that here, if nowhere else, there was some supernatural interference with the laws of Nature, and that the finger of the clock-maker did here alter the hands of the clock from the position which they would have occupied under the original law of its construction. But if this were so, it must equally in candour be admitted that the miracle did not consist in placing man and woman upon earth, at any recent period, or with faculties in any way developed, but could only have consisted in causing a germ or germs to come into existence, different from any that could have been formed by natural evolution, and containing within them the possibilities of conscious and civilised man, to be developed from the rudest origins by slow and painful progress over countless ages.

PART II.—MODERN THOUGHT

CHAPTER VII

MODERN THOUGHT

Lines from Tennyson—The Gospel of Modern Thought—Change exemplified by Carlyle, Renan, and George Eliot—Science becoming Universal—Attitude of Orthodox Writers—Origin of Evil—First Cause unknowable—New Philosophies and Religions—Herbert Spencer and Agnosticism—Comte and Positivism—Pessimism—Mormonism—Spiritualism—Dreams and Visions—Somnambulism—Mesmerism.

LIV.

Oh yet we trust that somehow good
Will be the final goal of ill,
To pangs of nature, sins of will,
Defects of doubt, and taints of blood ;
That nothing walks with aimless feet ;
That not one life shall be destroy'd,
Or cast as rubbish to the void,
When God hath made the pile complete ;
That not a worm is cloven in vain ;
That not a moth with vain desire
Is shrivel'd in a fruitless fire,
Or but subserves another's gain.
Behold, we know not anything.
I can but trust that good shall fall
At last—far off—at last, to all,
And every winter change to spring.
So runs my dream : but what am I ?
An infant crying in the night :
An infant crying for the light :
And with no language but a cry.

LV.

The wish, that of the living whole
No life may fail beyond the grave,
Derives it not from what we have
The likeliest God within the soul ?
Are God and Nature then at strife,
That Nature lends such evil dreams ?
So careful of the type she seems,
So careless of the single life ;

That I, considering everywhere
Her secret meaning in her deeds,
And finding that of fifty seeds
She often brings but one to bear,
I falter where I firmly trod,
And failing with my weight of cares,
Upon the great world's altar-stairs
That slope thro' darkness up to God,
I stretch lame hands of faith, and grope
And gather dust and chaff, and call
To what I feel is Lord of all,
And faintly trust the larger hope.

LVI.

"So careful of the type?" but no.
From scarped cliff and quarried stone,
She cries, "A thousand types are gone;
I care for nothing, all shall go."
"Thou makest thine appeal to me:
I bring to life, I bring to death:
The spirit does but mean the breath:
I know no more." And he, shall he,
Man, her last work, who seem'd so fair,
Such splendid purpose in his eyes,
Who roll'd the psalm to wintry skies,
Who built him fanes of fruitless prayer,
Who trusted God was love indeed,
And love Creation's final law—
Tho' Nature, red in tooth and claw
With ravine, shriek'd against his creed—
Who loved, who suffer'd countless ills,
Who battled for the True, the Just,
Be blown about the desert dust,
Or seal'd within the iron hills ?
No more! A monster then, a dream,
A discord. Dragons of the prime,
That tare each other in their slime,
Were mellow music match'd with him.
O life as futile, then, as frail !
O for thy voice to soothe and bless !
What hope of answer, or redress ?
Behind the veil, behind the veil.

TENNYSON, *In Memoriam*.
(By kind permission of Lord Tennyson.)

THESE noble and solemn lines of a great poet sum up in a few words what may be called "the Gospel of Modern Thought." They describe what is the real attitude of most of the thinking and earnest minds of the present generation. On the one hand, the discoveries of science have so far established the universality of law, as to make it impossible for sincere men to retain the faith of their ancestors in dogmas and miracles. On the other, larger views of man and of history have shown that religious sentiment is an essential element of human nature, and that many of our best feelings, such as love, hope, conscience, and reverence, will always seek to find reflections of themselves in the unseen world. Hence faith in dogma has diminished and charity increased. Fewer believe old creeds, and those who do, believe more faintly; while fewer denounce them, or are insensible to the good they have done in the past and to the truth and beauty of the essential ideas that underlie them.

On the Continent, and especially in Catholic countries, where religion interferes more with politics and social life, there is still a large amount of active hostility to it, as shown by the massacre of priests by the French Communists; but, in this country, the old Voltairean infidelity has died out, and no one of ordinary culture thinks of denouncing Christianity as an invention of priestcraft. On the contrary, many of our leading minds are at the same time sceptical and religious, and exemplify the truth of another profound saying of Tennyson:

There lives more faith in honest doubt,
Believe me, than in half the creeds.

The change which has come over modern thought cannot be better exemplified than by taking the instance of three great writers whose works have produced a powerful influence—Carlyle, Renan, and George Eliot. They were all three born and brought up in the very heart of different phases of the old beliefs—Carlyle, in a family which might be taken as a type of the best qualities of Scottish Presbyterianism, bred in a Lowland farmhouse, under the eye of a father and mother whom he loved and revered, who might have been the originals of Burns' "Cotter's Saturday Night," or the descendants of the martyrs of Claverhouse. His own temperament strongly inclined to

a stern Puritanical piety; his favourite heroes were Cromwell and John Knox; his whole nature was antipathetic to science. As his biographer, Froude, reports of him, "He liked ill men like Humboldt, Laplace, and the author of the 'Vestiges.' He refused Darwin's transmutation of species as unproved; he fought against it, though I could see he dreaded that it might turn out true." And yet the deliberate conclusion at which he arrived was that "He did not think it possible that educated honest men could even profess much longer to believe in historical Christianity."

The case of Renan was equally remarkable. He was born in the cottage of Breton peasants of the purest type of simple, pious, Catholic faith. Their one idea of rising above the life of a peasant was to become a priest, and their great ambition for their boy was that he might be so far honoured as one day to become a country curé. Young Renan, accordingly, from the first day he showed cleverness, and got to the top of his class in the village school, was destined for the priesthood. He was taken in hand by priests, and found in them his kindest friends; they sent him to college, and in due time to the Central Seminary where young men were trained for orders. All his traditions, all his affections, all his interests, led in that direction, and yet he gave up everything rather than subscribe to what he no longer believed to be true. His conversion was brought about in this way. Having been appointed assistant to a professor of Hebrew he became a profound scholar in Oriental languages; this led to his studying the Scriptures carefully in the original, and the conclusion forced itself upon him that the miraculous part of the narrative had no historical foundation. Like Carlyle, the turn of his mind was not scientific, and while denying miracles he remained keenly appreciative of all that was beautiful and poetical in the life and teaching of Jesus, which he has brought more vividly before the world in his writings than had ever been done by orthodox commentators.

George Eliot, again, was brought up in yet another phase of orthodox Christianity—that of middle-class nonconformist Evangelicalism. She embraced this creed fervently, and, as we see in her "Dinah," retained a keen appreciation

of all its best elements. But as her intellect expanded and her knowledge widened, she too found it impossible to rest in the old belief, and, with a painful wrench from a revered father and loving friends, she also passed over from the ranks of orthodoxy. She also, after a life of profound and earnest thought, came to the conclusion recorded of her by an intimate friend and admirer, M^r. Myers:

"I remember how at Cambridge, I walked with her once in the Fellows' Garden of Trinity, on an evening of rainy May; and she, stirred somewhat beyond her wont, and taking as her text the three words which have been used so often as the inspiring trumpet-calls of men—the words *God, Immortality, Duty*—pronounced, with terrible earnestness, how inconceivable was the *first*, how unbelievable the *second*, and yet how empty and absolute the *third*. Never, perhaps, had sterner accents affirmed the sovereignty of impersonal and unrecompensating law. I listened, and night fell; her grave, majestic countenance turned toward me like a Sibyl's in the gloom; it was as though she withdrew from my grasp, one by one, the two scrolls of promise, and left me the third scroll only, awful with inevitable fates."

Such instances as these cannot be the result of mere accident. As long as scepticism was confined to a limited number of scientific men it might be possible to think that it was merely the exaggeration of a particular train of thought pursued too exclusively. But when science has become the prevailing mode of thought, and has been brought home to the minds of all educated persons, it is no longer possible to represent it as an exceptional aberration. And where the bell-wethers of thought lead the way, the flock will follow. What the greatest thinkers think to-day, the company of thinkers will think to-morrow, and the great army of non-thinkers will treat as self-evident the day after. This is very nearly the case at the present day; the great thinkers have gone before, the mass of thinkers have followed, and the still greater mass of non-thinkers are wavering and about to follow. It is no longer, with those who think at all, a question of absolute faith against absolute disbelief, but of the more or less shade of "faintness" with which they cling to the "larger hope."

This is nowhere more apparent than in the writings of those who attempt to stem the tide which sets so strongly against orthodoxy. They resolve themselves mainly into one long wail of "oh the pity of it, the pity of it!" if the simple faith of olden times should disappear from the world. They show eloquently and conclusively that science and philosophy cannot satisfy the aspirations or afford the consolations of religion. They expose the hollowness of the substitutes which have been proposed, such as the worship of the unknowable, or the cult of humanity. They win an easy triumph over the exaggerations of those who resolve all the historical records of Christianity into myths or fabulous fulfilment of prophecies, and they wage fierce battles over minor points, as, for example, whether the first quotations from the Gospels are met with in the first or second half of the second century. But they nowhere attempt to grapple with the real difficulties, or to show that the facts and arguments which converted men like Carlyle and Renan are mistaken facts and unsound arguments. Attempts harmonise the Gospels and to prove the inspiration of writings which contain manifest errors and contradictions, have gone the way of Buckland's proof of a universal deluge, and of Hugh Miller's attempt to reconcile Noah's ark and the Genesis account of creation with the facts of geology and astronomy. Not an inch of ground that has been conquered by science has ever been reconquered in fair fight by theology.

This great scientific movement is of comparatively recent date. Darwin's "Origin of Species" was published only in 1859, and his views as to evolution, development, natural selection, and the prevalence of universal law, have already annexed nearly the whole world of modern thought and become the foundation of all philosophical speculation and scientific inquiry.

Not only has faith been shaken in the supernatural as a direct and immediate agent in the phenomena of the worlds of matter and of life, but the demonstration of the "struggle for life" and "survival of the fittest" has raised anew, and with vastly augmented force, those questions as to the moral constitution of the universe and the origin of evil, which have

long exercised the highest minds. Is it true that "love" is "Creation's final law," when we find this enormous and apparently prodigal waste of life going on; these cruel internecine battles between individuals and species in the struggle for existence; this cynical indifference of Nature to suffering? There are, approximately, 3,600 millions of deaths of human beings in every century, of whom at least 20 per cent., or 720 millions, die before they have attained to clear self-consciousness. What becomes of them? Why were they born? Are they Nature's failures, and "cast as rubbish to the void"?

To such questions there is no adequate answer. We are obliged to admit that as the material universe is not, as we once fancied, measured by our standards and regulated at every turn by an intelligence resembling ours; so neither is the moral universe to be explained by simply magnifying our own moral ideas, and explaining everything by the action of a Being who does what we should have done in his place. If we insist on this anthropomorphic conception we are driven to this dilemma. Carlyle bases his belief in a God, "the infinite Good One," on this argument: "All that is good, generous, wise, right—whatever I deliberately and for ever love in others and myself, who or what could by any possibility have given it to me but One who first had it to give? This is not logic; this is axiom."

But how of the evil? No sincere man looking into the depths of his own soul, or at the facts of the world around, can doubt that along with much that is good, generous, wise, and right, there is much that is bad, base, foolish, and wrong. If logic compels us to receive as an axiom a good author for the former, does not the same logic equally compel us to accept the axiom that the author of the latter must have been one who "first had it in himself to give"? That is, we must accept the theory of a God who is half good, half evil; or adopt the Zoroastrian conception of a universe contested by an Ormuzd and Ahriman—a good and evil principle, whose power is, for the present at any rate, equally balanced.

From this dilemma there is no escape, unless we give up altogether the idea of an anthropomorphic God, and adopt frankly the scientific idea of an "Infinite

and Eternal Energy," inscrutable and past finding out; and of a universe whose processes we can trace, but of whose ultimate essence we know nothing, only suspecting, or faintly discerning, a fundamental law which may make the polarity of good and evil a necessary condition of existence. This is a more sublime as well as more rational belief than the old orthodox conception; but there is no doubt that it requires more strength of mind to embrace it, and that it appears cold and cheerless to those who have been accustomed to see special providences in every ordinary occurrence, and to fancy themselves the special objects of supernatural supervision in all the details of daily life. Hopes and fancies, however, are powerless against facts; and the world is as surely passing from the phase of orthodox into that of scientific belief as youth is passing into manhood; and as the planet which we inhabit is passing from the more fiery state into that of temperate heat, progressive cooling, and final extinction as the abode of life. In the meantime, what can we do but possess our souls in patience, follow truth wherever it leads us, and trust, as Tennyson advises, that in the long run everything will be for the best, and "every winter turn to spring"?

The decay of old religious beliefs, and the introduction of new conceptions based on scientific discovery, have given rise to many attempts to found new philosophies, and in some cases new sects and religions, of some of the principal of which a short account may be given.

One of the greatest thinkers of modern times, Herbert Spencer, has expanded the theories of modern science, especially those of the conservation of energy and of Darwinian evolution, into a generalised philosophy, embracing not only the phenomena of the material and living universe, but also history, religion, politics, and all the complex relations of social life. He starts from the principle that throughout the universe, in general and in detail, there is an unceasing redistribution of matter and motion. This shows itself as evolution where there is a predominant aggregation of matter and diminution of motion, and as dissolution where matter is disintegrated and motion increased. Thus, in the formation of coal, the motion of the sun's rays is fixed in the condensed matter of the

products of vegetation, and is dissipated when, after countless ages, the coal is burned and its substance dissolved into its elements. These changes constitute a transformation of the uniform or homogeneous into the differentiated or heterogeneous, as seen in the condensation of nebulous or cosmic matter into suns and planets; in the varied elements of the inorganic world; "in each organism, vegetable or animal; in the aggregate of organisms, thought and geologic time; in the mind; in society; in all products of social activity." These changes are all in the direction of passage from an indefinite whole to definite parts, and they are inevitable, unless the original substance were so absolutely uniform as to be absolutely stable.

Once started, this process of differentiation tends necessarily to go on, the surrounding conditions being ever at work, whether by aggregation or dissolution, by joining like to like, or separating unlike from unlike, to sharpen and make more definite existing differences.

This is in effect a generalised conception of Darwin's laws of the "struggle for life" and "survival of the fittest." Finally, however, the result of all these changes is that an ultimate equilibrium will be reached, which is rest in the inorganic and death in the organic world; as when the sun with all its planets shall have parted with all its heat, and all its energy shall have run down to one uniform level. From this state it can only be roused by some fresh shock from without, dissipating it again into a mass of diffused matter and unbalanced motions.

Hence we come to the final statements of the Spencerian philosophy, as given in the words of its author:—

"This rhythm of evolution and dissolution, completing itself during short periods in small aggregates, and in the vast aggregates distributed through space completing itself in periods which are immeasurable by human thought, is, so far as we can see, universal and eternal, each alternating phase of the process predominating, now in this region of space and now in that, as local conditions determine. All these phenomena, from their great features even to their minutest details, are necessary results of the persistence of force under its forms of matter and motion. Given these as distributed through space, and their quantities being

unchangeable either by increase or decrease, there inevitably result the continuous redistributions distinguishable as evolution and dissolution, as well as the special traits above enumerated. That which persists, unchanging in quantity but ever changing in form, under these sensible appearances which the universe presents to us, transcends human knowledge and conception, is an unknown and unknowable power, which we are obliged to recognise as without limit in space and without beginning or end in time."

This is, in its highest form, the philosophy of Agnosticism. A very different thing, be it observed, from Atheism, for it distinctly recognises an underlying power which, although "unknown and unknowable," may be anything harmonising with the feelings and aspirations in which all religious sentiment has its origin, so long as it fulfils the condition of not, by too precise definition, coming into collision with something which is not "unknown" but "known" and irreconcilable with it.

For instance, there is nothing in Agnosticism to negative the possibility of a future state of existence. Behind the veil there may be anything, and no one can say that individual consciousness may not remain or be restored after death, and that our condition may not be in some way better or worse, according to the use we have made of the opportunities of life. But if any one attempts to define this future state and say we shall have spiritual bodies, live in the skies, sing psalms, and wave palm branches, we say at once, "This is partly unknowable and partly known to be impossible."

That which has given the philosophy of Spencer a wide influence is the manner in which he applies it to the subjects which more immediately concern the mass of thinking minds, such as history, politics, and the problems of social life. What Darwin shows in animal life and the origin of species, Spencer traces in the rise and fall of empires, the growth and decline of religions, the increasing complexity of social relations, the conflicting forces of evolution and dissolution at work around us in our every-day life in the relations of science and theology, capital and labour, state socialism and *laissez-faire*. For instance, the decline

the Roman Empire and its overthrow by the barbarians is analogous to the decay of a planet from loss of internal heat and its dissipation into matter capable of fresh evolution, by the shock of a comet. The ever-increasing gulf between wealth and poverty, science and superstition, resembles the process by which the one-toed horse became gradually differentiated more and more from the common five-toed type of its remote ancestor.

These speculations of Spencer, pursued with vast acuteness and research through all branches of social science, though they have not founded a new religion or established a new sect, have undoubtedly exercised a great influence on modern thought, especially among the rising generation.

Another "ism" which, although it has exercised a much narrower influence than the philosophy of Spencer, has founded a sect and put forward more definite claims to give the world a new religion is that which is known as "Positivism," or "Comtism," from the name of its founder, Auguste Comte. It is not easy to understand, but its essence seems to be this:—Admitting that science has killed theology, and that the old forms of supernatural religion, inevitable in the childhood of the world, have become incredible, Comte cast about for some idea which should be at the same time "positive," or based on ascertained fact, and fervid enough to satisfy the cravings of religious sentiment. He thought he found it in "Humanity;" that is, in love and veneration for the abstract idea of the human race, taken collectively, and considered in its past, present, and future relations. As patriotism, a very ardent feeling, is the love of a limited section of the human race; and as it has been gradually enlarged from the limits of a tribe to those of a city, and from those of a city to those of a country or nationality, he conceived that it might be still further enlarged so as to embrace all mankind. So far it may be admitted that there is a germ of truth in Comte's idea, and that elevated minds may enlarge their view beyond the narrow bounds of a particular country at a particular period, and may derive fresh incentives to action, and fresh subjects for ennobling thought, from a contemplation of the past progress, present condition, and future possibilities of the collective human race. But there is a

homely proverb that "charity begins at home," and as we widen the sphere of patriotism or philanthropy we are very apt to diminish their intensity and find them evaporate in a mist of high-sounding phrases. The "friend of man" is very apt to be the friend of no one man in particular, and to make universal philanthropy an excuse for neglecting individual charity.

Apart, however, from this objection, and granting that with increased intercourse and increased culture "Humanity" might become a more practical idea, we should be still a long way from making it the basis of a new religion. It is here that Comte has laid himself open to such criticism as that of Huxley, who defined Positivism as "Catholicism without Christianity." With the narrow systematising logic so characteristic of the French intellect Comte has worked out a complete scheme of ritual, hierarchy, and all the apparatus of an old religion. A supreme pontiff at its head, associated with a supreme priestess to represent the female element; for saints, the distinguished men of philosophy, theology, art and science; for days of worship, fête days of these saints, and meetings to commemorate their merits, and to observe certain "sacraments."

All this savours too much of the "Goddess of Liberty," and of the theo-philanthropy of the French Revolution, when the disciples of Rousseau cut off heads in the name of universal benevolence, to find much acceptance in a sceptical age and among a practical people. Robuster intellects, like George Eliot, even where they incline to accept Humanity as an ennobling idea, and to recognise Comte as an original thinker, reject all the constructive and ceremonial part of his new religion as unworthy of notice; while to the mass of thoughtful persons the whole thing appears unreal and paradoxical.

One more "ism"—Pessimism, the gospel of feebleness and failure—has had a considerable effect on the Continent, though little in this country. It is based on the fact that, in accordance with the universal law of polarity, progress is not an unmixed good, but develops a corresponding negative of failure. In simple forms of society the distinctions between wealth and poverty, capital and labour, culture and ignorance, are not so sharply defined, and the lot of those who fail in

the battle of life is not so hard as when men are congregated in crowded cities, exposed to temptations, and tantalised by the sight of wealth and luxury before their eyes and yet beyond their reach. A mass of misery and discontent is thus created, which in lower natures translates itself into anarchism and fanatical hatred of all above them, while in higher ones it takes the form of theories for the regeneration of the world by levelling everything that exists, and building anew on fresh foundations. Still higher minds see the futility of these theories, and take refuge in a philosophy which pronounces the world a mistake, life an evil, and universal suicide the only possible solution of what is radically bad. This is, in substance, the philosophy of Schopenhauer and the school of Continental Pessimists. It has something in common with Buddhism, which regards all personal existence as a painful dream or illusion, and places supreme happiness in escape from it by annihilation of individuality.

To understand how such a doctrine can have found acceptance, we must remember that the tendency of modern civilisation is to throw more and more work on the brain and nervous system and less on other organs. This of itself tends to produce more ill-health both of mind and body, especially of those digestive organs upon which the sensation of health and well-being so mainly depends. A dyspeptic man is of necessity an unhappy and desponding man. Moreover, in ruder states of society such weaklings were got rid of by the summary process of being killed off, while with the more humane and refined arrangements of modern times they live on and "weary deaf heaven with their fruitless cries."

It is among such men, with cultivated intellects, sensitive nerves, and bad digestion, that we find the prophets and disciples of the gospel of Pessimism. They feel, and feel truly, that as far as they are concerned life is an evil, the pains of which far outweigh its pleasures, and, having lost faith in a future life where the balance will be redressed, they see no remedy for the miseries of the world but that of ceasing to be, or annihilation.

This affords another illustration of the extent to which religions and philosophies are, like the spectre of the Broken, reflections of our own selves on dissolving mist, clothed with our own clothes and

repeating our own gestures. To a healthy man or to a strong man the pessimist view of the universe is simply impossible. If he has experienced a fair average of happiness and success in life, he instinctively rejects a creed which tells him that there are no lights as well as shadows. If he has a mind of average strength, he feels that suffering is a thing to be avoided prudently, borne stoically, or grappled with courageously, and not to be run away from by moral or physical suicide.

Accordingly Pessimism is not a creed which is ever likely to exert much influence on the strong, practical Anglo-Saxon race, and we can discern some faint traces of it only in the tendency of certain very limited cliques of so-called Aestheticism to admire morbid and self-conscious ideals, both in poetry and painting.

It is a very curious and remarkable fact, that while so many highly intellectual attempts have been made in vain in modern times to found new sects and religions, the only one which has had any real success is that which is based on the most gross and vulgar imposture—Mormonism. Mormonism is a fact which, without the vestige of a reasonable argument to show for itself, originating in the vulgar ravings and forgeries of a vulgar Yankee, and violating the first instincts of the family and of society by polygamy, still flourishes in spite of persecutions and prohibitions. The reason seems to be that, instead of being a theory in the air or over the heads of the masses, it is, with all its faults, a practical system in contact with the actual realities of life. Its success is mainly owing to its being an organised system of emigration, and a faith which places its Paradise here on earth and not in the skies. A poor ignorant labourer in Wales or Norway, who becomes a convert to Mormonism, is taken in hand at once, forwarded to his destination, and when he arrives there looked after and put in a way of earning an honest livelihood and probably becoming a landed proprietor. The ideal set before him is not a very high one, that of becoming a sober, industrious, respectable, narrow-minded citizen of the State of Utah, and a creditable member of the community of Latter Day Saints. But to a poor labourer from the slums of Liverpool, to lead such a life, in the pure mountain air

in the valley of the Salt Lake, and see his flocks and herds increasing and his family growing up, without care for the future, is indeed the realisation of an earthly Paradise. The moral to draw from this, that the success of a religion, under the conditions of modern society, does not depend so much on its theory as on the way in which it takes hold of the practical problems of life and shows an aptitude for grappling with them.

Another wide-spread modern delusion, that of Spiritualism, is akin to Mormonism, as showing how little reason has to do with the beliefs which are most readily propagated among large classes of the community. Nothing but the most morbid appetite for the supernatural, combined with the most absolute ignorance of the laws of evidence, could induce sane people to believe that, if a corner of that mysterious and awful veil were lifted which separates the living from the dead, we shall discover what!—spirits whose vocation it is to turn tables and talk twaddle.

In vain, medium after medium is detected, and the machinery by which ghosts are manufactured exposed in police-courts; in vain, the manifestations of the so-called spirits are repeated by professional conjurors like Maskelyne and Cooke, who disclaim any assistance from the unseen world. People are still found to believe the unbelievable because it gratifies their taste for the marvellous, and enables them to fancy themselves the favoured recipients of supernatural communications.

The explanation that Spiritualism has received a certain amount of acceptance from men of a very different order, like Crookes and Wallace, may be found in the phenomena associated with it, such as mesmerism and clairvoyance, which have a certain basis of fact, and open up interesting fields for scientific investigation. The working of the nervous apparatus in certain abnormal conditions, and the physical effects of imagination, are subjects imperfectly understood, but well deserving accurate inquiry.

Take, for instance, dreams, which afford the first certain starting-point towards a theory of visions and apparitions. It is as certain that we dream as that we sleep, and that in our sleeping state we often live a sort of second life, which is different from our ordinary

waking life. Dreams are made up of impressions which have been recorded by the brain in its waking state, and which are revived in new combinations and imaginary scenes, when consciousness is suspended. These impressions are thus often worked up into a succession of dreams so vivid as to be scarcely distinguishable from reality. It happened to me, about the middle period of my life, to be sent, almost at a day's notice, to India, where for more than two years I had a period of intensely hard work and great responsibility, as Finance Minister. This naturally left a number of strong impressions on my brain, which for years afterwards kept reviving in a series of connected dreams, in which I fancied myself back in India. I had thus a dream life as well as a real life of Indian experiences, and the former was so vivid that, if I were writing reminiscences, I should sometimes find it difficult to distinguish between the two.

This enables me to realise how dreams may readily pass into visions. If I had dozed off in an arm-chair after dinner, and fallen into one of my Indian dreams, I might have seen Lord Canning, who had been dead for years, walk into the room as distinctly as if he had been present in person. In a less critical age, and with a less sceptical turn of mind, I might readily have been convinced that I had seen his ghost.

There can be no doubt that, in this way, dreams must often, in pre-scientific ages, have originated a *bona fide* belief in spirits. Herbert Spencer traces to this cause the origin of all religious belief. Perhaps this may be carrying it too far, but doubtless it was one of the main causes, especially of that portion of religion which took the form of offerings to the dead, and ancestor-worship.

But a still further step may be taken from the ordinary dream to the waking dream or vision. It is a well-established fact that under peculiar and rare circumstances the brain may dream, that is, revive impressions where there is no corresponding reality, without losing its consciousness. There was a celebrated case of a Berlin bookseller in the last century, who, having fallen into bad health, lived for more than a year in the company of ghosts—that is, he constantly saw men and women, with every appearance of being alive, enter the

room and come and go as if they had been ordinary visitors. Being a man of a scientific turn of mind he never supposed that these were really ghosts, but reasoned on them and recorded his experiences. Instead of sending for a priest and resorting to exorcisms, he called in a physician and took a course of medicine, with the result that after a considerable time the ghostly visitors gradually became dim and finally disappeared.

Numerous other cases are recorded in which there is no doubt that visions have been seen, especially under the influence of religious excitement, and a large number of so-called miraculous appearances and ghost stories are probably owing to this cause rather than to conscious imposture.

When we consider the enormous number of dreams, and probably considerable number of visions, which occur, instead of being surprised at occasional coincidences, the wonder rather is that they are not more frequent. If only one per cent. of the 30,000,000 inhabitants of the British Isles dream every night, that would give 109,500,000 dreams per annum, a large proportion of which are made up of vivid impressions of actual persons and events. It is impossible that some of the combinations of these impressions should not form pictures which are subsequently realised, and we may be sure that the successes only will be noted, and the failures forgotten. It is strange, therefore, that the researches of the Psychical Society should not have brought to light more instances of death-warnings and other remarkable coincidences. To take the vulgar instance of horse-racing. A number of minds are greatly exercised over the problem of picking out winners, and doubtless a vast number of dreams show colours flashing past winning-posts, and numbers hoisted on the telegraph board. And yet I remember only two tolerably well-authenticated instances in the last half-century, in which any one is said to have backed a winner on the faith of a dream. The only positive result of dreams and visions is that they frequently occur under circumstances where they are almost certain to be mistaken, by unscientific persons in unscientific ages, for actual supernatural appearances.

Another field of inquiry is opened out

by the effects which are undoubtedly produced under certain abnormal conditions of the brain and nervous system, as in epilepsy, somnambulism, and mesmerism.

In the simplest case, that of epilepsy, the effect is mainly shown by a more intense action of nerve-currents, causing convulsive motions and an unnatural increase of muscular strength and rigidity, so that two strong men may be scarcely able to hold one weak woman. In somnambulism, the effects are more complex. The reception of outward impressions seems to be limited, so that the whole consciousness and vital energy are concentrated on particular actions, which are thus performed safely, while in the ordinary waking state they would be impossible. Thus a somnambulist walks securely along a plank spanning an abyss, because the impressions of surrounding space do not reach the brain and confuse it with a sense of danger. In this state also past impressions photographed on the brain, which in the ordinary waking state are obscured by other impressions, seem to come out occasionally as in dreams, enabling the somnambulist to do and remember things which would otherwise be beyond his faculties.

Mesmerism is closely akin to somnambulism. Apart from delusion and charlatanism the fact seems to be established that it is possible, by artificial means, to induce a state resembling somnambulism in persons of a peculiar nervous temperament. As regards the means, the essential point seems to be to throw the brain into this abnormal state partly by keeping an unnatural strain on the attention, and partly by acting on it through the imagination. The experiments of Dr. Braid showed that the mesmeric sleep could be induced just as well by keeping the eye strained on a black wafer stuck on a white wall, as by the manipulations of an operator. This experiment disposes of a great deal of mysterious nonsense about magnetic fluids, overpowering wills, and other supposed attributes of professional mesmerisers, and reduces the question to the plain matter-of-fact level of the relations between the brain, will, imagination, and nervous system, which exist in natural and in artificial somnambulism. These are undoubtedly very curious, and open up a wide field for physiological and mental research. As

far as I have seen or read, they seem to turn mainly on the reflex effects of an excited imagination on other organs and faculties. I do not believe that any one could be mesmerised who was absolutely ignorant of the subject and unconscious that any one was operating. On the other hand, any one who had frequently been mesmerised would fall into the sleep if led to believe that an operator was at work when there was really not one. And the peculiar effects shown in the mesmeric state are attributable mainly, if not entirely, to the imagination acting with morbid activity on the slightest hint or suggestion of what is expected. Thus the will disappears in the more powerful suggestion of the imagination that the patient has to obey the will of the operator, or do certain things which are in the programme. I can readily believe also that in this state the imagination can perform feats which would be impossible to it in a natural state when it is kept in check by other faculties, and that a good deal of what is called clairvoyance may be explained by the way in which the slightest hint from expression, involuntary muscular motion, or otherwise, is taken advantage of as a substitute for the ordinary modes of communication. Such a faculty may also doubtless be cultivated by practice, and thus explain many of the phenomena of what are called spiritual communications and thought-reading. But that impressions can be made on the brain, or that one mind can communicate with another, without some physical medium between object and subject, is unproved and remains incredible.

CHAPTER VIII

MIRACLES

Origin of Belief in the Supernatural—Thunder—Belief in Miracles formerly Universal—St. Paul's Testimony—Now Incredible—Christian Miracles—Apparent Miracles—Real Miracles—Absurd Miracles—Worthy Miracles—The Resurrection and Ascension—Nature of Evidence required—Inspiration—Prophecy—Direct Evidence—St. Paul—The Gospels—What is Known of Them—The Synoptic Gospels—Resemblances and Differences—Their Origin—Papias—Gospel

of St. John—Evidence rests on Matthew, Mark, and Luke—What each states—Compared with one another and with St. John—Hopelessly Contradictory—Miracle of the Ascension—Silence of Mark—Probable Early Date of Gospels—But not in their Present Form.

WHEN men began to reason on the phenomena of the world around them, it was inevitable that they should begin by referring all striking occurrences to supernatural causes. Just as they measured space by feet and inches, and time by days and years, they referred unusual events to personal agencies. They knew by experience that certain effects were produced by their own wills, muscular energies, and passions; and when they saw effects which seemed to be of a like nature, they inferred that they must have been produced by like causes.

To take the familiar instance of thunder. The first savage who thought about it must have said: "The sound is very like the roar with which I spring on a wild beast or an enemy; the flash of lightning is very like the flash of the arrow or javelin with which I strike him; the effect is often the same, that he is killed. Surely there must be some one in the clouds, very strong, very angry, very able to do me harm, unless I can propitiate him by prayers or offerings." But after long centuries, science steps in. An elderly gentleman at Philadelphia, Benjamin Franklin by name, sends up a silk kite during a thunder-storm, and behold! the lightning is drawn down from the skies, tamed, and made to emit harmless sparks, or to follow the course of a conducting wire, at our will and pleasure. There is no more room left for the supernatural in the fiercest tropical thunder-storm than there is in turning the handle of an electrical machine, or sending in a tender to light the streets of London by electricity. And the result is absolutely certain. In the contest between the natural and the supernatural, the latter has not only been repulsed but annihilated. The most orthodox believer in miracles, if his faith were brought to the practical test of backing his opinions by his money, would rather insure a gin-palace or gambling saloon protected by a lightning-conductor than a chapel protected by the prayers of a pious preacher.

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This instance of thunder is a type of the revolution of thought which has been brought about by modern science in the whole manner of viewing the phenomena of the surrounding universe. Former ages saw miracles everywhere, the age in which we live sees them nowhere, except possibly in the single instance of the miracles recorded in the Bible. In the annals of grave Roman historians,

In every page *locutus* *bos*.

Not a Caesar or a Consul died, without an ox speaking, or a flaming sword in the skies predicting portents. If the moon happened to pass between the sun and the earth the dim eclipse

With fear of change perplexes monarchs.

If the winds blow it is because *Æolus* releases them from the cave; if the rains fall it is because *Jupiter* opens the windows of heaven, or *Indra* causes the cloud-cows to drop their milk on the parched earth. Perhaps no better proof can be afforded of the universal belief that miracles were considered matters of every-day occurrence than is given by the passage in *St. Paul's Epistle to the Corinthians*, in which he enumerates the principal Christian gifts, and assigns, as it were, their comparative order and the number of marks that should be given to each in a competitive examination.

The power of "working miracles" comes low in the list. "First apostles, secondarily prophets, thirdly teachers, after that miracles, then gifts of healings, helps, governments, diversities of tongues." And he goes on to say, in words that come home to every heart in all centuries, that all those things are worthless as compared with that true Christian charity which "suffereth long, and is kind; envieth not; vaunteth not itself, is not puffed up, doth not behave itself unseemly, seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things, hopeth all things, endureth all things."

This is in the true spirit of modern thought, which, when the externals of religion fail, strives to look below them at its essence, and to retain what is eternally true and beautiful as the ideal of a spiritual and the guide of a practical life, while rejecting all the outward apparatus of metaphysical creeds and

incredible miracles, which had only a temporary value, and can no longer be believed without shutting one's eyes to facts and becoming guilty of conscious or unconscious insincerity.

But to return to miracles. Almost the entire world of the supernatural fades away of itself with an extension of our knowledge of the laws of Nature, as surely as the mists melt from the valley before the rays of the morning sun. We have seen how, throughout the wide domains of space, time, and matter, law, uniform, universal, and inexorable, reigns supreme; and there is absolutely no room for the interference of any outside personal agency to suspend its operations. The last remnant of supernaturalism, therefore, apart from the Christian miracles which we shall presently consider, has shrunk into that doubtful and shady border-land of ghosts, spiritualism and mesmerism, where vision and fact, and partly real, partly imaginary, effects of abnormal nervous conditions, are mixed up in a nebulous haze with a large dose of imposture and credulity.

Even this region is being contracted every day by every fresh revelation in a police-court; in every fresh discovery of the laws which regulate the transmission of nervous energy to and from the brain; and in the abnormal state which constitutes epilepsy and somnambulism, and which enables an excited imagination to produce physical effects, such as those of drastic drugs on a patient who has actually taken nothing but pills of harmless paste.

The question of Christian miracles, however, rests on a different and more serious ground. They have been accepted for ages as the foundation and proof of a religion which has been for nineteen centuries that of the highest civilisation and purest morality, and for this reason alone they deserve the most reverent treatment and the most careful consideration.

Of a large class of these miracles it may be said that there is no reason to doubt them, but none to consider them as violations of law, or anything but the expression, in the language of the time, of natural effects and natural causes. When a large class of maladies were universally attributed to the agency of evil spirits which had taken possession of the patient's body, it was inevitable that

many cures would be effected, and that these cures would be set down as the casting-out of devils. In many cases also a strong impulse communicated to the brain may send a current along a nerve which may temporarily, or even permanently, restore motion to a paralysed limb, or give fresh vitality to a paralysed nerve. Thus, the lame may walk, the dumb speak, and the blind see, with no more occasion to invoke supernatural agency than if the same effects had been produced by a current of electricity from a voltaic battery. There is no reason to doubt that miracles of this sort have been frequently wrought by saints and relics, and that even at the present day they may possibly be wrought at Lourdes and other shrines of Catholic faith. Only at the present day we scrutinise the evidence and count the failures, and admit nothing to be supernatural which can be explained as within a fair average result of exceptional cases under the operation of natural laws. In like manner we set down all visions or apparitions as having no objective reality if they can be explained by the known laws of dreams or other vivid revivals of impressions, on the brain of the person who perceives them.

There remains the class of really supernatural miracles, or miracles which could by no possibility have occurred as they are described, unless some outward agency had suspended or reversed the laws of Nature. As regards such miracles, a knowledge of these laws enormously increases the difficulty in believing in them as actual facts. Take for instance the conversion of water into wine. When nothing was known of the constitution of water or of wine, except that they were both fluids, it was comparatively easy to accept the statement that such a conversion really took place. But now we know that water consists of oxygen and hydrogen combined in a certain simple proportion, and of these and nothing else; while wine contains in addition nitrogen, carbon, and other elements combined in very complicated proportions. If the water was not really changed into wine, but only seemed to be so, it was a mere juggling trick, such as the Wizard of the North can show us any day for a shilling. But if it was really changed, something must have been created out of nothing to supply the elements which were not in the

original water and were not put into it from without.

Again, those who have followed the question of spontaneous generation, and witnessed the failure of the ablest chemists to produce the lowest forms of protoplasmic life from inorganic elements, will hardly believe that such a highly organised form of life as a serpent could have been really produced from a wooden rod. And this, be it observed, not only by Moses the prophet of God, but by the jugglers who amused the court of Pharaoh by their conjuring tricks; and for an object of no greater moment than to persuade a king to allow some of his subjects to emigrate, which object, moreover, notwithstanding the miracle, entirely failed, as the king simply "hardened his heart" and persisted in his refusal.

But passing from this class of grotesque and incredible miracles, let us examine those which may be called worthy miracles; that is, miracles disfigured by no absurd details, and wrought for objects of sufficient importance to justify supernatural interference, if ever such interference were to take place. At the head of such miracles must undoubtedly be placed those of the Resurrection of Jesus. The appearances to the Apostles, and above all the bodily Ascension to heaven in the presence of more than 500 witnesses, were a fitting termination to the drama of his life and sufferings, and afforded a conclusive test of the fact which was the foundation-stone of the new religion.

"If Christ be not risen, then is our preaching vain," says St. Paul; and he proceeds to argue that the whole question of the reality of a future life hinges on the fact that Christ really rose from the dead. His theory is that death came into the world by the sin of the first man, Adam, and has been destroyed and swallowed up in immortality by the victory of the second man, Christ. This theory has, from that day to this, been the key-stone of Christian theology.

There can be no doubt, therefore, that if any miracle is true this must be the one, and, on the other hand, if this miracle cannot be established by sufficient proof, it is idle to discuss the evidence for other miracles. In order to go to the root of the matter therefore, it is necessary to consider, in a calm and

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judicial spirit, the evidence upon which this miracle of the Resurrection really rests.

In the first place we must consider what sort of evidence is required to prove a miracle. Clearly it must be evidence of the most cogent and unimpeachable character, far more conclusive than would be sufficient to establish an ordinary occurrence. The discoveries of modern science have shown beyond the possibility of doubt that the miracles which former ages fancied they saw around them every day had no real existence, and that, except possibly in the solitary instance of the Christian miracles, there has been no supernatural interference with the laws of Nature throughout the enormous ranges of space, time, and matter. It may be going too far to say with Hume that no amount of evidence can prove a miracle, since it must always remain more probable that human testimony should be false than that the laws of Nature should have been violated. But it is not going too far to say that the evidence to establish such a violation must be altogether overwhelming and open to no other possible construction.

Consider, now, the significance of the statement that a dead man rose in the body from the grave, ate, drank, and held intercourse with living persons. There are some 1,500 millions of human beings living in the world, and somewhat more than three generations in each century, that is, there are some 3,600 millions of deaths per century, and this has been going on for some forty or fifty centuries, or longer. It is certain, therefore, that at least 150,000 millions of deaths must have taken place, and a large proportion of these under circumstances involving the most heart-rending separations, and the most intense longing on the part of the dying to give, and of the living to receive, some token of affection from beyond the grave. And yet no such token has ever been given, and the veil which separates the dead from the living has never been lifted, except possibly in one case out of this 150,000,000,000. Surely it must require very different evidence to establish the reality of such an exception, from that which would be sufficient to prove the signature to a will or the date of a battle.

But just when the new views opened

up by modern science made it more difficult to believe in miracles, and more exacting in the demand for stronger evidence to support them, the old evidence became greatly weakened. The main evidence which satisfied our forefathers was that the Bible was inspired, and that it asserted the reality of the miracles. This, when critically examined, was really no evidence at all, for how did we know that the Bible was inspired? Because it was proved to be so by miracles. The argument was therefore in a circle, and resembled that of the Hindoo mythology, which rested the earth on an elephant and the elephant on a tortoise. But what did the tortoise rest on?

To examine the matter more closely, what is the meaning of inspiration? It means that a certain book was not written, as all other books in the world have been written, by writers who were fallible, and whose statements and opinions, however admirable in the main and made in perfect good faith, inevitably reflected the views of the age in which they lived and contained matters which subsequent ages found to be obsolete or erroneous, but that this particular book was miraculously dictated by an infallible God, and therefore absolutely and for all time true. But, as a chain cannot be stronger than its weakest link, if any one of these statements was proved not to be true, the theory of inspiration failed, and human reason was called on to decide by the ordinary methods, whether any, and if any, what parts of the volume were inspired and what uninspired.

Now it is absolutely certain that portions of the Bible, and those important portions relating to the creation of the world and of man, are not true, and therefore not inspired. It is certain that the sun, moon, stars, and earth, were not created as the author of Genesis supposed them to have been created, and that the first man, whose Palæolithic implements are found in caves and river gravels of immense antiquity, was a very different being from the Adam who was created in God's likeness and placed in the Garden of Eden. It is certain that no universal deluge ever took place since man existed, and that the animal life existing in the world, and shown by fossil remains to have existed for untold ages, could by no possibility have originated from pairs of

animals living together for forty days in the ark.

Another test of inspiration is afforded by the presence of contradictions. If one writer says that certain events occurred in Galilee, while another says that they took place at Jerusalem, they cannot both be inspired. They may be both reminiscences of real events, but they are obviously imperfect and not inspired reminiscences, and require to be tested by the same process of reasoning as we should apply in endeavouring to unravel the truth from the confused and contradictory evidence of conflicting historians.

Inspiration is clearly as much a miracle as any of the miracles which it relates, and there is only one way conceivable by which it could be proved, so as to afford a solid basis for faith and give additional evidence in support of the supernatural occurrences said to have taken place; that would be if it carried with it internal evidence of its truth. Such evidence might be afforded in one way, and in one only—by prophecy. If any volume written many centuries ago contained a clear, definite, and distinct prophecy of future events, which the writer could by no possibility have known or conjectured, such a prophecy must have been dictated by some agency different from anything known in the ordinary course of nature; and future ages, seeing the fulfilment of the prophecy, could scarcely doubt that the volume which contained it was inspired. But such a prophecy must be quite definite, so that there could be no doubt as to whether it had been fulfilled or not, and must not consist of vague and mystic utterances, in which future believers might find meanings, probably never thought of by the prophets themselves, confirming the faith which, from other considerations, they thought it a sin to disbelieve. Nor must it consist of passionate aspirations for deliverance, and predictions of the downfall of cruel conquerors, wrung from the hearts of an oppressed people in times of imminent danger and crushing despair; because such predictions have been partly verified and partly transformed in future ages, so as to receive a new and spiritual significance.

There is one prophecy which affords a test by which to judge of the value of all

others as a proof of inspiration, for it is perfectly distinct and definite, and comes from the highest authority—that of the approaching end of the world contained in the New Testament.

St. Matthew reports Jesus to have said:

"For the Son of man shall come in the glory of his Father with his angels; and then he shall reward every man according to his works.

"Verily I say unto you, There be some standing here, which shall not taste of death, till they see the Son of man coming in his kingdom."

It is certain that all standing there did taste death without seeing the Son of Man coming with his angels. The conclusion is irresistible, that either Jesus was mistaken in speaking these words, or else Matthew was mistaken in supposing that he spoke them.

St. Paul predicts the same event in still more definite terms. He says:

"For this we say unto you by the word of the Lord, that we which are alive and remain unto the coming of the Lord shall not prevent them which are asleep.

"For the Lord himself shall descend from heaven with a shout, with the voice of the archangel, and with the trump of God: and the dead in Christ shall rise first:

"Then we which are alive and remain shall be caught up together with them in the clouds, to meet the Lord in the air."

Here is the most distinct prediction possible, both of the event which was to happen, and of the limit of time within which it was to take place; and, to give it additional force, it is specially declared to be an inspired prophecy uttered as "the word of God."

The time is distinctly stated to be in the lifetime of some of the existing generation, including Paul himself, who is to be one of the "we which are alive," who are not to "prevent," or gain any precedence over, those who have "fallen asleep," or died, in the interval before Christ's coming. By no possibility can this be construed to mean a coming at some indefinite future time, long after all those had died who were to remain and be caught up alive into the clouds. St. Paul doubtless meant what he said, and firmly believed that he was uttering an inspired prophecy which would certainly

be fulfilled. But it is certain that it was not fulfilled. Paul and all Paul's contemporaries have been dead for 1,800 years, and the shout, the voice of the archangel, and the trump of God, have never been heard. What is this but an absolutely irresistible demonstration that prophecy not only fails to prove inspiration, but, on the contrary, by its failure disproves it, and shows that St. Matthew and St. Paul were as liable to make mistakes as any of the hundreds of religious writers who, in later times, have prophesied the approaching end of the world or advent of the millennium.

Turning to the evidence for miracles, this must be taken on its own merits, without aid from any preconceived theory that it is sinful to scrutinise it because the books in which it is contained are inspired. Applying to it impartially the ordinary rules of evidence, let us see what it amounts to for that which is really the test case of all other miracles, that of the Resurrection.

The witnesses are St. Paul and the authors of the four Gospels according to St. Matthew, St. Mark, St. Luke, and St. John. Of these, St. Paul is in some respects the best. When a witness is called into court to give evidence, the first question asked is, "Who are you? Give your name and description." St. Paul alone gives a clear answer to this question. There is no doubt that he was an historical personage, who lived at the time and in the manner described in the Acts of the Apostles, and that the Epistle to the Corinthians is a genuine letter written by him. In this Epistle he says :

"For I delivered unto you first of all that which I also received, how that Christ died for our sins according to the scriptures ;

"And that he was buried, and that he rose again the third day according to the scriptures :

"And that he was seen of Cephas, then of the twelve :

"After that, he was seen of above five hundred brethren at once ; of whom the greater part remain unto this present, but some are fallen asleep.

"After that, he was seen of James ; then of all the apostles.

"And last of all he was seen of me also, as of one born out of due time."

This is undoubtedly very distinct

evidence that the appearances described by St. Paul were currently believed in the circle of early Christians at Jerusalem within twenty years of their alleged occurrence.

This is strong testimony, but it is weakened by several considerations. In the first place, we know that Paul's frame of mind in regard to miracles was such as to make it certain that he would take them for granted, and not attempt to examine critically the evidence on which they were founded, and this was doubtless the frame of mind of those from whom he received the accounts. Again, he places all the appearances on the same footing as that to himself, which was clearly of the nature of a vision, or strong internal impression, rather than of an objective reality. Upon this vital point, whether the appearances which led to the belief in Christ's resurrection were subjective or objective—that is, were visions or physical realities—Paul's testimony therefore favours the former view, which is quite consistent with the laws of Nature and with experience in other cases.

And finally, St. Paul's account of the appearances is altogether different from those of the other witnesses, viz, the four Evangelists.

When we come to consider the testimony of the four Gospels we are confronted by a first difficulty : Who and what are the witnesses ? What is really known of them is this : Until the middle of the second century they are never quoted, and were apparently unknown. Somewhere about 150 A.D., for the exact date is hotly disputed, we find the first quotations from them, and from that time forwards the quotations become more frequent and their authority increases, until finally they superseded all the other narratives current in the early Church, such as the "Gospel of the Hebrews," and the "Pastor" of Hermas, and are embodied in the New Testament canon. From the earliest time where there is any distinct recognition of them, they appear to have been attributed to the Evangelists whose names they bear, viz, Matthew, Mark, Luke, and John.

When we look to internal evidence to give us some further clue as to their authorship and date, we at once meet with a great difficulty. The three Gospels of SS. Matthew, Mark, and Luke, are called

"Synoptic," because they give what is substantially the same narrative of the same facts arranged in the same order, and the same sayings and parables giving the same view of the character and teaching of Jesus. In whole passages this resemblance is not merely substantial but literal, so that we cannot suppose it to arise merely from following the same oral tradition, and cannot doubt that the authors must have copied verbatim either from one another or from some common manuscript. But then comes in this perplexing circumstance. After passages of almost literal identity we have statements which are inconsistent with those of the other Gospels, and narratives of important events which are either altogether wanting or quite differently described in them.

Thus, in the vital matter of the Resurrection, Matthew says that the disciples were especially commanded to "go into Galilee; there shall you see him," and that they did go accordingly, and there saw Jesus on a mountain where he had appointed them to meet him; while Luke distinctly says that "he commanded them that they should not depart from Jerusalem," and describes them as remaining there and witnessing a number of appearances, including the crowning miracle of the Ascension (the same, doubtless, as that which St. Paul describes as having taken place in the presence of more than 500 witnesses), of which Matthew, Mark, and John apparently know nothing. And yet the final injunction of Jesus to preach the gospel in his name to all nations is given in almost the same words in Matthew, Mark, and Luke, showing that they must have had before them some common tradition describing the course of events after the Crucifixion.

So in minor matters, Mark mentions the cure of one blind man, Bartimæus, who sat by the roadside begging; in Matthew there are two blind men, and yet the dialogue that passed—"What wilt thou that I shall do unto thee?"—"Lord, that my eyes may be opened"—is almost word for word the same. It would seem that if they did copy from an original manuscript, they felt themselves free to take any liberties with it they liked, in the way of omission and alteration.

The only light thrown on this perplexing question of the origin of the Gospels is that afforded by the celebrated

passage from Papias quoted by Eusebius. Papias was Bishop of Hieropolis, in Asia Minor, and suffered martyrdom, when an aged man, about the year 164. He was therefore brought-up in personal contact, not with the Apostles themselves, but with those who, like Polycarp and others, had been their immediate disciples, and had known and conversed with them. In the passage quoted he states his preference for oral tradition over written documents, and his reasons for it. He says: "If I found some one who had followed the first presbyters, I asked him what he had heard from them; what said Andrew or Peter, or Philip, Thomas, James, John, or Matthew; and what said Andrew and John the Presbyter, who were also disciples of the Lord; for I thought I could not derive as much advantage from books as from the living and abiding oral tradition." And he goes on to give his reasons for not attaching more weight to the two written sources of information which were evidently best known and looked upon as of most authority in his time, viz., the Gospels according to St. Matthew and St. Mark. He says that Matthew wrote down in Hebrew the Logia, or principal sayings and discourses of the Lord, "which every one translated as he best could," evidently implying that these numerous translations were, in his opinion, loose, inaccurate, and unreliable. As regards Mark, he says that "Mark, who had not known the Lord personally, and had never heard Him, followed Peter later as his interpreter; and when Peter, in the course of his teaching, mentioned any of the doings or sayings of Christ, took care to note them down exactly, but without any order, and without making a continuous narrative of the discourses of the Lord, which did not enter into the intention of the Apostle. Thus Mark let nothing pass, jotting down a certain number of facts as Peter mentioned them, but having no other care than to omit nothing of what he heard, and to change nothing in it."

This testimony of Papias is very valuable and very instructive. In the first place, it seems conclusive that the Gospel of St. John was not known to him, and not received in the early Christian Churches of Asia Minor as a work of authority. Had it been so received, Papias must have known of it, brought

up as he was at the feet of men who had been John's disciples, and bishop of a Church closely connected with those of which, if there is any faith in tradition, John had been the patriarch and principal founder. And if he had known of such a written Gospel as that of St. John, and believed it to have been really written by the "beloved disciple," the Apostle second only, if second, to St. Peter; it is inconceivable that he should have expressed such an unqualified preference for oral tradition, and made such an almost contemptuous reference to written documents. He must have said: "For, with the exception of the Gospel of the blessed John, I found that little was to be got from books."

It seems clear, therefore, that although the Gospel of St. John may contain genuine reminiscences of an early date, and possibly some which really came from the Apostle himself, the work in its present form could not have been written by him, and must have been compiled at such a late date as to have been unknown in the Christian Churches of the East in the time of Papias.

The same remark applies to the Gospel of St. Luke, of which Papias has equally no knowledge, and which, from internal evidence, appears to be a later edition of the two earlier Gospels, or of the original manuscripts from which they were taken, altered in places to meet objections of a later date, as where the injunction to "go into Galilee; there shall ye see him," is changed into "as he spake unto you when he was yet in Galilee," obviously to reconcile the statement with the subsequent belief that the Ascension took place at Jerusalem.

There remain the two original Gospels according to St. Matthew and St. Mark. Volumes of erudition have been written to try and reconcile them with one another, and with the other two Gospels, and to explain the extraordinary resemblances and no less extraordinary differences. Translations have been heaped on translations, and successive editions and revisions piled on one another until the edifice toppled over by its own weight, but after all, we have nothing better to rely on than the statement of Papias, which there is no reason to mistrust. The basis of the three Synoptic Gospels was probably a collection of facts and anecdotes written down in Greek by Mark, and of discourses

written in Hebrew by Matthew. These have been worked up subsequently, at unknown dates, and by unknown authors, aided possibly by oral traditions, into connected narratives or biographies of the life and teachings of the Founder of the religion.

Possibly, though by no means certainly, we have in the present Gospel according to St. Matthew the nearest approach to the original Logia or doctrinal discourses, and in the present Mark the nearest approach to the original notes recorded by Mark from the dictation of St. Peter.

As regards the Gospel according to St. John, it appears perfectly clear, both from the silence of Papias, the absence of any reference to it by other early Christian Fathers until the end of the second century, and still more from internal evidence, that it could not possibly have been written by the Apostle whose name it bears. John, as we know from St. Paul's Epistles, was one of the pillars of the Christian Church of Jerusalem, whose doctrine was in all respects Hebraic, and who opposed the larger idea that a man could be a Christian without first becoming a Jew.

The writer of the Gospel is not only ignorant of matters which must have been well known to every Jew, but he is positively prejudiced against Judaism, and represents it in an unfavourable light. His narrative of the events of the life of Jesus, including the miracles, is totally different from that of the Synoptics, and his view of his character and report of his speeches wide as the poles asunder. To the Synoptics Jesus is the man-Messiah foretold by the prophets; to the author of John he is the "Logos," the incarnation of a metaphysical attribute of the Deity.

The terse and simple clearness of his sayings recorded by the first, is exchanged in the latter for an involved and cumbrous phraseology reminding one of a Papal Encyclical. The amiability and "sweet reasonableness" of the Jesus of the Synoptics, have become acrimonious unreasonableness and egotistical self-glorification in many of the long harangues which are introduced on the most unlikely occasions in the fourth Gospel.

It is evident, therefore, that this Gospel can afford no aid towards a critical examination of contemporary evidence, and that for this we must look

almost entirely to such remains of early records as are preserved in the Gospels of St. Matthew, St. Mark, and St. Luke. With these data, how does the evidence stand as regards the miracle of the Resurrection which is the test case of all alleged miracles?

It is important to observe that the oldest manuscripts of the Gospel of St. Mark stop at the 8th verse of the last chapter, and that the subsequent verses, 9—20, have every appearance of being a later addition made to reconcile this Gospel better with the prevailing belief and with the other Gospels. Commentators discover a difference in the style and language, and the appearances of Jesus after his resurrection are described in vague and general language, very different from the distinct details given of them in the other Gospels, and inconsistent with the formal statement twice repeated in the genuine Mark that they were to take place in Galilee. Moreover, if these verses were really in the original Gospel, it is inconceivable how they should have dropped-out in the oldest manuscripts, while it is perfectly conceivable how they should have been added at a later period, when the Fathers of the Church began to occupy themselves with the task of harmonising the different Gospels.

But if the genuine Mark really terminated with the 8th verse, not only is there no confirmation of the four miraculous appearances, including the Ascension, recorded by St. Paul as being currently believed by the early Christians within twenty years of their occurrence, but there is positively no mention of any appearance at all. A young man, clothed in white, tells three women who went to the tomb that Jesus is risen, and that they were to tell his disciples and Peter that they would see him in Galilee; an injunction which was not carried out, for the women "were afraid, neither said they anything to any man."

In St. Matthew the young man has become an angel, and as the women return from the tomb Jesus met them and said, "All hail," repeating the injunction to tell the disciples to go into Galilee, where the eleven accordingly went into a mountain where Jesus had appointed them, and "when they saw him they worshipped him: but some doubted." This is the whole of Matthew's testimony.

St. Luke, again, in his Gospel and Acts, amplifies the miraculous appearances almost up to the extent described by St. Paul, though with considerable differences both of addition and omission. The three women become a number of women; the one angel or young man in shining clothes, two; the appearance to the women disappears; Peter is mentioned as running to the sepulchre but departing without seeing anything special except that the body had been removed; the first appearance recorded is that to the two disciples walking from Emmaus, who knew him not until their eyes were opened by the breaking of bread, when he vanished; the next appearance is to the eleven sitting at meat with closed doors; and finally there is the crowning miracle of the Ascension, stated somewhat vaguely in the Gospel, but with more detail in the Acts, describing how he was taken up to heaven and received in a cloud, in the sight of numerous witnesses. This is probably the same miracle as that mentioned by St. Paul as having occurred in the presence of "more than five hundred brethren at once, of whom the greater part remain alive unto this present," though he mentions two subsequent appearances—one to James and a second to all the Apostles—of which no trace is found in any other canonical narrative. It is to be noted that all St. Luke's miracles are expressly stated to have occurred at Jerusalem, where Jesus had commanded his disciples to remain, and are, therefore, in direct contradiction with the statements of Matthew and Mark, that whatever occurred was in Galilee, where the disciples were expressly enjoined to go.

When we come to St. John, we find the first part of the narrative of the other Gospels repeated with several variations and a great many additional details. Mary Magdalene is alone, and finds the stone removed from the sepulchre. She tells Peter and John, who run together to the tomb; John outruns Peter, but Peter first enters and sees the napkin and linen grave-clothes, but nothing miraculous, and they return to their homes. Mary remains weeping and sees, first two angels, and then Jesus himself, whom she at first does not recognise, and mistakes for the gardener. The walk to Emmaus is not mentioned, and the

next appearance is to the disciples sitting with closed doors. Another takes place after eight days, for the purpose of convincing Thomas of the reality of the resurrection in the actual body, and here apparently the narrative closes with the appropriate ending, "That these things are written that ye may believe that Jesus is the Christ, the Son of God; and that believing ye might have life through his name." But a supplementary chapter is added, describing a miraculous draught of fishes and appearance to Peter, John, and five other disciples at the Sea of Tiberias in Galilee, in which the command is given to Peter to "Feed my sheep," and an explanation is introduced of what was doubtless a sore perplexity to the early Christian world, the death of St. John before the coming of the Messiah.

These are the depositions of the five witnesses, Matthew, Mark, Luke, John, and Paul, in which the verdict "proven" or "not proven" must rest in regard to the issue "miracle" or "no miracle."

The mere statement of them is enough to show how insufficient they are to establish any ordinary fact, to say nothing of a fact so entirely opposed to all experience as the return to life of one who had really died. Suppose it were a question of proving the signature of a will, what chance would a plaintiff have of obtaining a verdict who produced five witnesses, four of whom could give no certain account of themselves, while the fifth spoke only from hearsay, and the details to which they deposed were hopelessly inconsistent with one another as regards time, place, and other particulars? The account of the Ascension brings this contradiction into the most glaring light. According to St. Luke and St. Paul this miracle took place at Jerusalem, in the presence of a large number, St. Paul says over 500 persons, before whose eyes Jesus was lifted-up in the body into the clouds, and more than half, or over 250 of these witnesses, remained alive for at least twenty years afterwards to testify to the fact. Consider what this implies. Such an event occurring publicly in the presence of 500 witnesses is not like an appearance to a few chosen disciples in a room with closed doors: it must have been the talk of all Jerusalem.

The prophet who had shortly before

entered the city in triumphal procession amidst the acclamations of the multitude, and who, a few days afterwards, by some sudden revolution of popular feeling, had become the object of mob-hatred; who had been solemnly tried, condemned, and executed; that this prophet had been restored to life and visibly translated in the body to heaven in the presence of more than 500 witnesses, must inevitably have caused an immense sensation. However prone the age might be to believe in miracles, such a miracle as this must have startled every one. The most incredulous must have been converted; the High Priest and Pharisees must, in self-defence, have instituted a rigid inquiry; the Proconsul must have reported to Rome; Josephus, who, not many years afterwards, wrote the annals of the Jews during this period with considerable detail, must have known of the occurrence and mentioned it.

And above all, Matthew, Mark, and John must have been aware of the occurrence; and in all probability, Matthew, John, and Peter, from whom Mark derived his information, must have been among the 500 eye-witnesses. How then is it possible that, if the event really occurred, they not only should not have mentioned it, but partly by their silence, and partly by their statement that they went into Galilee, have virtually contradicted it. The Ascension, if true, was a capital fact, not only crowning and completing the drama of Christ's life which they were narrating with its most triumphant and appropriate ending, but confirming, in the strongest possible manner, the doctrine for which they were contending, that he was not an ordinary man or ordinary prophet, but the Messiah, the Son of God, who had redeemed the world from its original curse and conquered sin and death. One might as well suppose that any one writing the life of Wellington would omit the Battle of Waterloo as that any one writing the life of Christ would knowingly and wilfully omit all mention of the Ascension. It must be evident that whoever wrote the original manuscripts from which the Gospels of Matthew, Mark, and John were compiled, must either never have heard of the Ascension, or having heard of it did not believe it to be true. This must also

apply to the other miraculous appearances said to have occurred at Jerusalem. How was it possible for writers who knew of them to make no mention of them, and virtually contradict them by asserting that they did not remain at Jerusalem, but went to Galilee in obedience to a command to that effect, and that the final parting of Jesus from his disciples took place there?

The most unaccountable fact is the total silence of Mark, who was nearest the fountain-head if he derived his information from St. Peter, as to these miraculous appearances. If his Gospel ended with verse 8 of chapter xvi., as the oldest manuscripts and the internal evidence of the postscripts afterwards added appear to prove, there is absolutely no statement of any such appearance at all. Nothing is said but that three women found the tomb empty and saw a young man clothed in white, who told them that Jesus had risen and gone into Galilee. Now, if there is one fact more certain than another about miraculous legends, it is that as long as they have any vitality at all, they increase and multiply and do not dwindle and diminish. We have an excellent example of this in the way in which a whole cycle of miracles grew up in a short time about the central fact of the martyrdom of St. Thomas à Becket.

If, therefore, Matthew and Mark knew nothing of the series of miracles, which from St. Paul's statement we must assume to have been currently believed by the early Christians twenty years after the death of Christ, the only possible explanation is that their Gospels were compiled from narratives which had been written at a still earlier date, before these miracles had been heard of.

We must suppose that Mark really wrote down what he heard from Peter, and that Peter, being a truthful man, though he probably had a sincere general belief that Christ had risen, declined to state facts which he knew had never occurred. This is in entire accordance with what we find in the whole history of ecclesiastical miracles, from those recorded in Scripture down to those of St. Francis of Assisi in the thirteenth century, and of St. Francis Xavier in the sixteenth. Innumerable as are the accounts of miracles said to have been wrought by relics or by other holy per-

sons, there is no instance of any statement by any credible person that he had himself worked a real miracle. St. Augustine describes in detail many wonderful miracles, including resurrections from the dead, which he said had been wrought to his own knowledge, within his own diocese of Hippo, by the relics of the martyr Stephen. In fact, he says that the number of miracles thus wrought within the last two years since these relics had been at Hippo, was at least seventy. This testimony is far more precise than any for the Gospel miracles, for it comes from a well-known man of high character, who was on the spot at the time, and speaks of these and many other miracles having occurred to his own knowledge. But he never asserts that he himself had ever wrought a miracle.

In like manner Paulinus relates many miracles of his master, St. Ambrose, including one of raising the dead; but Ambrose himself never asserts that he performed a miracle. Neither does St. Francis of Assisi, or any of the 25,000 saints of the Roman calendar to whom miracles are attributed.

Even Jesus himself seems, on several occasions, to have disclaimed the power of working miracles, as when he refused to comply with the perfectly reasonable request of the Jews to attest his Messiahship by a sign, if he wished them to believe in it.

There is every reason, therefore, to believe that when we find narratives making no mention of important miracles which were afterwards commonly received, they must be taken from records of an earlier date, and proceeding directly from those who, if the miracles were true, would have been the principal eye-witnesses to vouch for them. But, if this be so, how near to the fountain-head do these narratives carry us? We lose the miracles, but in compensation we get what may be considered fresh and lively narratives of the life and conversation of Jesus, and confirmation both of his being an historical personage, and of the many anecdotes and sayings which depict his character, and bring him before us as he really lived. The mythical theory cannot stand which found in every saying and action an *ex post facto* attempt to show that he fulfilled prophecies and realised Messianic expectations. We can see him walking through the fields on a

Sabbath afternoon with his disciples, plucking ears of corn, and rebuking the Pharisees for their puritanical adherence to the letter of the observance of that day; we can see him taking little children in his arms, and talking familiarly at the well with the woman of Samaria; we can hear him preaching the Sermon on the Mount, and dropping parables from his mouth, like precious pearls of instruction in love, charity, and all Christian virtues. We can sympathise with the agony in the garden as with a real scene, and hear the despairing cry, "My God, my God, why hast thou forsaken me?"

It seems to me that faith in the reality of scenes like these is worth a good deal of faith in the metaphysical conundrums of the Athanasian Creed, or in the actual occurrence of incredible miracles.

Another argument in favour of the early date and genuine character of the primitive records which have been worked up in the Synoptic Gospels, is afforded by the sayings attributed to Jesus. It is impossible to imagine that these could be the invention of a later age, when theological questions of faith and doctrine had absorbed almost the entire attention of the Christian world. We have already seen how wide is the difference, both as regards style and phase of thought, between the discourses reported in the fourth Gospel and those of the Synoptics. No one writing in the second or towards the end of the first century, or even earlier in the religious atmosphere of St. Paul's Epistles, could have composed the Sermon on the Mount or the Lord's Prayer. The parables and maxims, instead of teaching nothing but a pure and sublime morality in simple language, must have contained references to the doctrine of the Logos, and the disputes between the Jewish and the Gentile Christians. Even if these discourses had passed long through the fluctuating medium of oral tradition, they must, when finally reduced to writing, have shown many traces of the theological questions which agitated the Christian world. The only explanation is that Apostles like St. Matthew, and St. Peter through Mark, really recorded these sayings in writing while they were fresh in memory, and that their authority secured them from adulteration.

At the same time it must be borne in

mind that while portions of the original narrative appear to carry us back very near to the fountain-head, a large part of the Gospels in their present form is evidently of much later date and of uncertain origin. It is clear that Papias, writing about the year 150, knew nothing of the Gospels of Luke and John, and nothing of those of Matthew and Mark in their present form. The discourses of Matthew and the disconnected notes of Mark, to which he refers, were something very different from the complete histories of the life and teaching of Jesus contained in the present Gospels. It is equally clear that Justin Martyr and Hegesippus, who wrote about the middle of the second century, and made frequent quotations of the sayings and doings of the Lord, made them, not from the present canonical Gospels, but from other sources relating the same things in different order and different language. "A Gospel according to the Hebrews" and "Memoirs of the Apostles" seem to have been the principal sources from which they quoted.

It is evident however, that during the first two centuries there were a great number of so-called Gospels and Apostolic writings floating about in the Christian world along with oral traditions. The author of Luke tells us this expressly, and later writers refer to a number of works now unknown or classed as apocryphal, and complain of forged Gospels circulated by heretics. None of these writings, however, seem to have had any peculiar authority or been considered as inspired Scripture, which term is exclusively confined to the Old Testament, until the middle of the second century.

At length, by a sort of law of the survival of the fittest, the present Gospels acquired an increasing authority and superseded the other works which had competed with them; but the selection was determined to a great extent, not by those principles of criticism which would now be applied to historical records, but by doctrinal considerations of the support they gave to prevalent opinions. In other words, orthodoxy and not authenticity was the test applied, and it is probable that no Christian Father of the second or third century would have hesitated to reject an early manuscript traceable very clearly to an Apostle, in favour

of a later compilation of doubtful origin, if the former contained passages which seemed to favour heretical views, while the latter omitted those passages, or altered them in a sense favourable to orthodoxy.

To sum up the matter, it appears that apart from the fact that the antecedent improbability of miracles has been enormously increased by the constant and concurrent proofs of the permanence of the laws of Nature, the evidence for those recorded in the New Testament, with which alone we are concerned, is rendered null and void by the discordant reports of hearsay witnesses.

CHAPTER IX

CHRISTIANITY WITHOUT MIRACLES

Practical and Theoretical Christianity—Example and Teaching of Christ—Christian Dogma—Moral Objections—Inconsistent with Facts—Must be accepted as Parables—Fall and Redemption—Old Creeds must be Transformed or Die—Mahometanism—Decay of Faith—Balance of Advantages—Religious Wars and Persecutions—Intolerance—Sacrifice—Prayer—Absence of Theology in Synoptic Gospels—Opposite Pole to Christianity—Courage and Self-reliance—Belief in God and a Future Life—Based mainly on Christianity—Science gives no Answer—Nor Metaphysics—So-called Intuitions—Development of Idea of God—Best Proof afforded by Christianity—Evolution is Transforming it—Reconciliation of Religion and Science.

CAN Christianity continue to exist without miracles?

To answer this question we must distinguish between practical and theoretical Christianity. The essence of practical Christianity consists in such a genuine acceptance of its moral teaching, and love and reverence for the life and character of its Founder, as may influence conduct, and be a guide and support in life. Theoretical Christianity is that which professes to teach a complete theory of the creation of the world and man, of the relations between man and his Creator, and of his position and destiny in a future state of existence.

The former needs no miracles. The Sermon on the Mount, and St. Paul's description of Christian charity, carry

their own proof with them, and such parables as that of the Good Samaritan require no support, either from historical evidence or from supernatural signs, to come home to every heart whether in the first or in the nineteenth century. The fact that the son of a Jewish mechanic, born in a small town of an obscure province, without any special aid from position, education, or other outward circumstance, succeeded, by the sheer force of the purity and loveliness of his life and teaching, in captivating all hearts and founding a religion which for nineteen centuries has been the main civilising influence of the world and the faith of its noblest men and noblest races; this fact, I say, is of itself so admirable and wonderful as not to require the aid of vulgar miracles and metaphysical puzzles in order to be recognised as worthy of the highest reverence. And when such a life was crowned by a death which remains the highest type of what is noblest in man, self-sacrifice in the cause of truth and for the good of others, we may well call it divine, and not quarrel with any language or any forms of worship which tend to keep it in view and hold it up to the world as an inducement to a higher life.

Miracles are not only unnecessary for a faith of this description, but are a positive hindrance to it. To put it at the lowest, miracles, in an age which has learned the laws of Nature, must always be open to grave doubts, and thus throw doubt on the reliability of the narratives which are supposed to depend on them. Moreover, the touching beauty and force of example of the life of Jesus are almost lost if he is evaporated into a sort of supernatural being, totally unlike any conceivable member of the human family. We may strive to model our conduct at a humble distance on that of the man Jesus, the carpenter's son, whose father and mother, brothers and sisters, were familiar figures in the streets of Nazareth, but hardly on that of a "Logos," the incarnation of a metaphysical conception of an attribute of the Deity, who existed before all worlds and by whom all things were made.

But, on the other hand, miracles are indispensable for the dogma, or theoretical side of Christian theology. Let us consider frankly what this dogma is, and how far it is *true*—that is, consistent or

inconsistent with known and indisputable facts.

The Christian dogma cannot be better stated than in the words of St. Paul, who was its first inventor, or, at any rate, the first by whom it was elaborated into a complete theory.

"For as in Adam all die, even so in Christ shall all be made alive."

This may be expanded into the following propositions:

1. That the Old Testament is miraculously inspired, and contains a literally true account of the creation of the world and of man.

2. That, in accordance with this account, the material universe, earth, sun, moon, and stars, and all living things on the earth and in the seas, were created in six days, after which God rested on the seventh day.

3. That the first man, Adam, was created in the image of God and after His own likeness, and placed, with the first woman, Eve, in the Garden of Eden, where they lived for a time in a state of innocence, and holding familiar converse with God.

4. That by an act of disobedience they fell from this high state, were banished from the Garden, and sin and death were inflicted as a penalty on them and their descendants.

5. That after long ages, during which mankind remained under this curse, God sent His Son, who assumed human form, and by His sacrifice on the cross appeased God's anger, removed the curse, and destroyed the last enemy, death, giving a glorious resurrection and immortal life to those who believed on Him.

This theory is a complete one, which hangs together in all its parts, and of which no link can be displaced without affecting the others. It is the theory which has been accepted by the Christian world since its first promulgation; and, although expounded with metaphysical refinements in the Athanasian Creed, and set forth with all the gorgeous surroundings of poetical imagination in Milton's "Paradise Lost," it remains in substance St. Paul's theory, that "as in Adam all die, even so in Christ shall all be made alive."

It is obvious that this theory is open to grave objections on moral grounds. It is more in the character of a jealous Oriental despot than of a loving and

merciful Father, to inflict such a punishment on hundreds of millions of unoffending creatures for an act of disobedience on the part of a remote ancestor. And it is still more inconsistent with our modern ideas of justice and humanity to require the vicarious sacrifice of an only Son as the condition of forgiving the offence and removing the curse.

Nevertheless it must be admitted that, notwithstanding these objections, and harsh as the theory is, it has had a wonderful attraction for many of the highest intellects and noblest nations.

It was the creed of Luther, Cromwell, and Milton; and the inspiring spirit of Scotch Presbyterianism and English Puritanism. It has inspired great men and great deeds, and although responsible for a good deal of persecution and fanaticism, it must always be spoken of with respect, as a creed which has had a powerful effect in raising men's minds from lower to higher things, and has on the whole done good work in its time.

But the question of its continuance as a creed which it is possible for sincere men to believe, as literally and historically true, depends not on wishes and feelings, nor on reverence for the past, but on hard facts. Is it or is it not consistent with what are now known to be the real truths respecting the constitution of the universe and the origin of life and of man?

To state this question is to answer it. There is hardly one of the facts shown in the preceding chapters to be the undoubted results of modern science which does not shatter to pieces the whole fabric. It is as certain as that two and two make four that the world was not created in the manner described in Genesis; that the sun, moon, and stars are not lights placed in the firmament or solid crystal vault of heaven to give light upon the earth; that animals were not all created in one or two days, and spread over the earth from a common centre in Armenia, after having been shut up in pairs for forty days in an ark, during a universal deluge. And finally, that man is not descended from an Adam created quite recently in God's image, and who fell from a high state by an act of disobedience, but from a long series of Palæolithic ancestors, extending back certainly into the Glacial and probably

into the Tertiary period, who have not fallen but progressed, and by a slow and painful process of evolution have gradually developed intelligence, language, arts, and civilisation, from the very rudest and most animal-like beginnings.

Belief in inspiration, the very keystone of the system, becomes impossible when it is shown that the accounts given of such important matters in the writings professing to be inspired are manifestly untrue; and when the ordinary rules of criticism are brought to bear upon these writings it is at once seen that they are compilations of different ages from various and uncertain sources.

The improbability of miracles is enormously increased by the proof of the uniform operation of natural law throughout the vast domains of space, time, matter, and life; and where the supernatural was formerly considered to be a matter of every-day occurrence, it has vanished step by step, until only the last vestige of it is left in a possible belief in some of the more important and impressive miracles of the Christian dispensation. Even this faint belief is manifestly founded more on reverence for tradition, and love of the religion which the miracles are supposed to support, than on any dispassionate view of the evidence on which they rest. Tried by the ordinary rules of evidence, it is apparent that it is contradictory and uncertain, and not such as would be sufficient to establish in a court of law any ordinary fact, such as the execution of a deed. It is apparent also that the evidence for the most crucial and important of all miracles, that of the Ascension, is not nearly so precise and cogent as that for a number of early Christian and mediæval miracles which we reject without hesitation.

What follows? Must we reject these venerable traditions as old wives' fables? I answer, No; but we can accept them as parables.

A great deal of the best teaching of the New Testament is conveyed in the form of parables. Take for instance that of Lazarus and Dives. No one supposes that this is an historical narrative; that this particular Jew, out of the millions of poor and good Jews who have lived and died, was actually taken up into Abraham's bosom; and that the remarkable dialogue across the gulf is a literal

transcript of an actual conversation. But the moral, is taught for all time, that it is bad for the rich to indulge in selfish luxury and take no thought of the mass of poverty and misery weltering around them; and that the condition of the poorest of the poor, borne with piety and resignation, may really be better and higher than that of the selfish rich. Apply the same principle to the dogma of the fall and redemption, and we may see in it a parable of the highest meaning. Every one of us must be conscious of having fallen by yielding to temptation and giving way to animal passions. We may have fallen so low that without some redemption, or friendly influence from without, we cannot raise ourselves from the lower level and regain our lost place. We can see that there are thousands round us, who, from poverty or other adverse circumstances, have got immersed in evil conditions from which it is hopeless to extricate themselves without friendly aid. We can see also that there is nothing more noble and divine than to make sacrifices in order to be the redeemer who saves as many souls as possible from this entanglement of evil, and gives them a chance of rising into a happier and better life. We may feel this, and use as an incentive to attempt some humble imitation of it, the parable which presents it to us in its highest aspect, and has been the efficient means of stimulating so many good men to do good works. This is surely better than paltering with the truth, and enervating our conscience and intelligence by professing to believe in the literal historical accuracy of things which

NOTE.—Since writing this chapter, I have seen with much pleasure an article entitled "Christmas," by Matthew Arnold, in a recent number of the *Contemporary Review*, which takes exactly the same view of the allegorical or parabolic sense of miraculous narratives. He takes the instance of the Immaculate Conception and Birth of Jesus, and shows that it was a myth which grew up, almost inevitably, from the strong impression made on the minds of early Christians by the idea of purity set forth by the life and teaching of Jesus, which stood in such striking contrast with the corruption of the heathen world. The same idea led to a similar myth in the case of Gautama, the pure and self-sacrificing founder of the Buddhist religion, and it teaches an eternal truth to all who can look below the letter to the spirit of the parable.

have become incredible to all thinking and educated minds. Of course, I do not mean that these dogmas and miraculous narratives were intended by the original writers to be parables, but only that they have become so to us; and the alternative lies between rejecting them altogether or accepting them as having an allegorical meaning or latent truth, or, it may be added, as recording the state of intelligence and knowledge of the age which produced the stories.

At any rate, whether we like it or not, this is what we shall have to do, for the conclusions of science are irresistible, and old forms of faith, however venerable and however endeared by a thousand associations, have no more chance in a collision with science than George Stephenson's cow had if it stood on the rails and tried to stop the progress of a locomotive. It is not enough to say that a thing is lovely and amiable, and that its loss will leave a blank, to ensure its continuance. The law of Nature is progress and not happiness. Stars, suns, planets, human individuals, and human races have their periods of youth, maturity, and decay, and are continually being transformed into new phases.

The old order changes, giving place to new, And God fulfils Himself in many ways.

Childhood, with its innocence and engaging ways, passes into the sterner and more prosaic attributes of the grown-up man; fancy decays as reason ripens; simple faith is replaced by larger knowledge; and the smooth brow of infancy becomes often marred by wrinkles of strife and suffering, impressed during the more or less successful struggle in the battle of life; and yet we could not if we would, and would not if we could, arrest the progress of Nature, and say that the child shall never grow into a man.

Such also is the fate of creeds. They must be transformed or die; and the best test of the vitality and intrinsic truth of a religion is just that capacity for transformation against which theologians exclaim as sacrilege. In this respect Christianity has a great advantage over other religions. The pious souls who are shocked at any denial of the inspiration of Scripture may console themselves by considering what has been the fate of other religions which have been

imprisoned too closely within the limits of a sacred book. Mahometanism, the religion of one God and a succession of prophets or great men who have taught his doctrines, is not in theory inconsistent with progress and civilisation. But Mahomet unfortunately wrote a book, the Koran, which, while it contained much that to the Arab mind was sublime and beautiful, was of necessity impregnated with the ideas of the age in which he lived; an age of much ignorance and superstition, of imperfect social arrangements, and of barbarous and ferocious manners. This book came to be accepted as the inspired word of Allah, which it was impious to question, to which nothing could be added, and from which nothing could be taken away. Hence Mahometanism has become what we see it—a narrow and fanatical creed, incompatible with progress and free thought, and stereotyping institutions, such as polygamy and slavery, which are fatal to any advance towards a higher civilisation. From this fate Christianity has been saved by the fortunate circumstance that its sacred books are collections of a variety of writings of different authors and different ages, reflecting such various and often conflicting phases of thought and belief that of necessity their interpretation was very elastic, and lent itself readily to the changes required by the spirit of successive periods and of different nationalities. Wherever for a time a system of infallibility was enforced, as in Spain by the Inquisition, Christianity became cruel, barbarous, unprogressive, and really very little better than the religion of Islam, to which it closely approximated. Decay of faith, therefore, in dogmatic Christianity is, like other great revolutions of thought, a question, not of absolute gain nor absolute loss, but of a balance between conflicting advantages and disadvantages.

The loss is evident enough, and is set forth with much eloquence and force by the few remaining champions of orthodoxy. The simple, undoubting faith, which has been for ages the support and consolation of a large portion of mankind, especially of the weak, the humble, and the unlearned, who form an immense majority, cannot disappear without a painful wrench, and leaving, for a time, a great blank behind. But, on the other

hand, there are a great many real and important advantages which have to be set on the credit side of the account.

Intolerance is the shadow which dogs the footsteps of faith, and in many cases more than obscures its benefits. When we consider the mass of human misery which has been occasioned by religious wars and persecutions; as in the ruthless extirpation of the Albigenses; the slaughter of the saints

whose bones

Lie scattered on the Alpine mountains cold;

the Thirty Years' War, which desolated Germany and threw civilisation back for a century; the civil wars of France; the Spanish Inquisition; and a thousand other instances of the baleful effects of religious hatreds, we can almost sympathise with those who pronounce religion an invention of priests for the promotion of evil, and exclaim with the Roman poet:

Religio tantum potuit suadere malorum.

To this must be added the misery caused by the belief in demonology and witchcraft, and the tortures inflicted on innumerable innocent victims by prejudices inspired by a literal construction of passages of the Old Testament. Nor is it a small matter to have escaped from the nightmare dreams which must have oppressed so many minds, especially of the young and imaginative, in an age when such a book as Dante's "Inferno" could be written, and accepted as a gleam of prophetic insight into the horrors of the invisible world.

Even in more recent and humane times, intolerance remained as a general mode of thought, inspiring hatred of those whose form of belief differed from that which was generally adopted. It is only within the present generation that true tolerance has come to be established as the law of modern thought, and that men have learned to live together and love one another, without reference to intellectual differences of creed and doctrine. Surely this is a great advantage, and we are nearer to the true spirit of Christianity than in the days when a Birmingham mob sacked Priestley's house because he professed his belief in the saying of Jesus, that "my Father is greater than I." We may read the

Athanasian Creed less, but we practise Christian charity more, in the present than in any former age.

Another great advantage is that as freer thought has been brought to bear on the mysteries of religion, we have purged, off the grosser ideas, and arrived at much more enlarged and spiritual conceptions. Take, for instance, prayer and sacrifice. In its crude form, sacrifice was a sort of bargain struck with an unscathed Power, by which we hoped to obtain some favour which we greatly desired, in exchange for giving up something which we greatly valued. This is the form in which sacrifice appears in the Old Testament, in Abraham's offer to kill his son Isaac, and in the record of the Moabitish stone, how the king, when besieged in his capital, sacrificed his son, and by so doing obtained the favour of his God and defeated his enemies. In another form, sacrifice was considered as a propitiation to appease the anger of an offended Deity, pictured as a sort of Oriental despot, who must have some one for a victim, and was not particular who it might be; and even in the Christian dogma the merit of the sacrifice is very closely analogous to that of the Mayor of Calais who went out to King Edward with a halter round his neck, ready to be hanged, so that he might save the lives of his fellow-citizens.

Nowadays, no one thinks of sacrifice as anything but the sacrifice of lower instincts and passing temptations to a higher ideal, and the voluntary renunciation of selfish ease and pleasure for the good of others.

In like manner, the original idea of prayer was that of obtaining a request by flattery or importunity, just as a courtier might do at the court of some earthly king of kings or sultan. It is now spiritualised into the conception that its effect is entirely subjective; that it never really obtains any reversal of the laws of Nature, but that it often exalts the mind to a frame in which things otherwise impossible become possible. A German regiment marches to battle singing Luther's grand old hymn—

Ein feste Burg ist unser Gott.

Half the regiment may be freethinkers, but it is nevertheless true that they are more likely to stand firm and win the

victory if they chant the hymn, than if they march in silence.

Taking all these things into account, there is no reason to despair because the irresistible progress of science has made us

Falter where we firmly trod,

and changed a great deal of what was once fixed and certain faith into vague aspirations and less definite, though larger and more spiritual, conceptions.

There is next to no theology in the Christianity of the Synoptic Gospels, which give us by far the nearest and most authentic record of what its Founder actually taught; and it may be that in sloughing-off the mythical legends and metaphysical dogmas which have grown up around it, we shall be, in reality, not banishing the Christian religion from the world, but making it revert to its more simple and spiritual ancestral type, in which form all that is really valuable in its pure and elevated morality may be incorporated more readily with practical life, and assimilated without difficulty with the progressive evolution of modern thought and science.

At the same time we must bear in mind that even Christianity in its purest form does not escape from the universal law of polarity, and presents, not the whole truth, but only one very important side of truth. It is the religion of love, purity, gentleness, and charity; important virtues, but not all that constitute the perfection of men or nations. In fact, if carried to the "falsehood of extremes," its very virtues become vices. It would not work in practice, if smitten on one cheek to turn the other; and any one who attempted to follow literally the precept of "taking no thought for the morrow," and trusting to be fed like the sparrows, would, in modern society, come dangerously near being what we call in Scotland a "ne'er-do-weel," that is to say, a soft, molluscous sort of creature, who is a burden on his friends, and ends his days as a pensioner on charity or a writer of begging letters. The foremost men and foremost races of modern society are precisely those who act on the opposite principle, and do look ahead and steer wisely and boldly amidst dangers and difficulties for distant and definite ends.

In one of the old Norse sagas there is a

saying which has always impressed me greatly. An aged warrior, when asked what he thought of the new religion, replied: "I have heard a great deal of talk of the old Odin and of the new Christ, but whenever things have come to a real pinch, I have always found that my surest trust was in my own right arm and good sword."

This strong self-reliance and hardy courage to do or to endure is, beyond all doubt, the solid rock foundation upon which the manly character of individuals and of nations must be built up. The softer virtues and graces which are to refine and adorn, and convert the man into the *gentle* man, or one of Nature's true gentlemen, come afterwards. But without the harder gifts of courage and self-help, a man is not a man, and the raw material is not there out of which to fashion a Gordon or Christian hero.

This may be called the Norse pole as contrasted with the pole of Christianity, and the perfect man is he who can stand firmly between the two opposites, controlling both while controlled by neither.

While I have thought it right, however, to call attention to this counter-pole to Christianity, I should add that with the strong, practical Teutonic races there is not much danger of erring on the side of too much weakness, humility, or asceticism, and therefore the influence of the Christian religion makes mainly for good. Modern civilisation has been formed, to a great extent, by grafting the gentler virtues of the Gospel on the robust primitive stock of the barbarians who overthrew Rome. It is the example and teaching of Jesus, the son of the carpenter of Nazareth, which have been mainly instrumental in diffusing ideas of divine love, charity, and purity throughout the world, and humanising the iron-clad and iron-souled warriors, whose trust was in their stout hearts and strong right arms, and who knew no law but

The simple plan,
That he should take who has the power,
And he should keep who can.

In another respect it is most important that the world should, as far and as long as possible, hold on to Christianity and struggle to save its essential spirit from the shipwreck of its theology, and from

the sheer impossibility of believing in the literal and historical truth of many of its dogmas.

The highest and most consoling beliefs of the human mind are to a great extent bound up with the Christian religion. If we ask ourselves frankly how much, apart from this religion, would remain of faith in a God and in a future state of existence, the answer must be, very little. Science traces everything back to primeval atoms and germs, and there it leaves us. How came these atoms and energies there, from which this wonderful universe of worlds has been evolved by inevitable laws? What are they in their essence, and what do they mean? The only answer is, it is unknowable. It is "behind the veil," and may be anything. Spirit may be matter, matter may be spirit. We have no faculties by which we can even form a conception, from any discoveries of the telescope or microscope, from any experiments in the laboratory, or from any facts susceptible of real human knowledge, of what may be the first cause underlying all these phenomena.

In like manner we can already to a great extent, and probably in a short time shall be able to the fullest extent, to trace the whole development of life from the lowest to the highest; from protoplasm, through monera, infusoria, mollusca, fish, reptile, and mammal, up to man—and the individual man from the microscopic egg, through the various stages of its evolution up to birth, childhood, maturity, decline, and death. We can trace also the development of the human race through enormous periods of time, from the rudest beginnings up to its present level of civilisation, and show how arts, languages, morals, and religions have been evolved gradually by natural laws from primitive elements, many of which are common in their ultimate form to man and the animal creation.

But here also science stops. Science can give no account of how these germs and nucleated cells, endowed with these marvellous capacities for evolution, came into existence or got their intrinsic powers. Nor can science enable us to form the remotest conception of what will become of life, consciousness, and conscience, when the material conditions with which they are always associated while within human experience, have

been dissolved by death and no longer exist. We know as little in the way of accurate and demonstrable knowledge of our condition after death as we do of our existence—if we had an existence—before birth.

If we turn for an answer to these questions from science to metaphysics, we find ourselves in cloud-land. Mists of fine phrases and plausible conjectures condense into philosophies, and dissolve away again without leaving a vestige of positive knowledge. Take Descartes' famous fundamental axiom, "Cogito, ergo sum,"—I think, therefore I am. Is it really an axiom? Does it take us any nearer to what thought really is, and what is the true meaning of existence? If the fact that I am conscious of thinking proves the fact that I exist, is the converse true, that whatever does not think does not exist? Am I existent or non-existent during the seven or eight hours of dreamless sleep out of every twenty-four, when to a certainty I am not thinking? Does a child only begin to exist when it begins to think? If "Cogito, ergo sum," is an intuition to which we can trust, why is not "Non cogito, ergo non sum," an equally good foundation on which to build a system of philosophy, and spin out of the brain an ideal system of God, man, and the universe?

The so-called intuitions of metaphysics seem really to amount to little more than translations into philosophical language of our own earnest wishes and aspirations. We shudder at the notion of annihilation; we revolt at the idea that all the high faculties of the mature and cultivated mind are to be extinguished by death; we long for a future life, in which we may again see beloved faces, and, pondering on these things, we have a strong impression that it must not and cannot be, which presently takes the form, in some minds of a philosophical turn, of what is called an intuition, on which they proceed to build up a demonstration of God and immortality.

But, again, what do they really know more than science has already told us? The essence of all spiritual existence, as far as we know anything of it, is personal consciousness. This clearly depends on, or is indissolubly associated with, a certain condition of a material organ—the brain. With a less active condition

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of this organ, as in sleep, personal consciousness is suspended. In the case of a man recovered from drowning by artificial means, it is gone, and the man is to all intents and purposes dead for perhaps a quarter of an hour, and would remain dead if warm blankets and artificial respiration did not recall him to life. Where and what was he during this interval? and, if his personal identity and conscious existence were gone for that quarter of an hour, why and when did they return? and, if the Humane Society's men had been less prompt, would they ever have returned?

These are questions to which no metaphysical system that I have ever seen can return the semblance of an answer.

Again, how is it possible for philosophy to lay down as an axiom that man has an intuitive perception of a Deity, in the face of the fact that whole races of savage men have no such perception, and have not got beyond rude fetishism and a vague superstitious fear of ghosts and evil spirits, while others, further advanced, have made their own anthropomorphic gods, obviously from reflections of their own faculties and passions on the distant mists of the unknown, like the spectres of the Broken? We can trace the idea of Deity, step by step, from early attempts to explain phenomena of nature, astronomical, legendary, and linguistic myths, and reverence for departed ancestors and heroes, up to the philosophical conceptions of a Plato or a Marcus Aurelius. In the same way we can trace, step by step, the transformation of the tribal God of Abraham, Isaac, and Jacob, into the national God of Israel, who was at first only better and stronger than the gods of the surrounding nations, but finally became the sole God of the universe, degrading the other gods to the category of dumb idols. So, also, we can see the first crude anthropomorphic conceptions of this Deity gradually giving way to purer and nobler ideas. The God who required rest on the seventh day becomes the Almighty one at whose word all things were created. The jealous and cruel God who withdrew His favour from the chivalrous Saul, because he would not hew his captives in pieces before the Lord, is transformed into the God who "loves mercy and not sacrifice." The God who found after His own heart the man whose depraved mind could con-

ceive such an act of foul villainy as David practised towards Uriah, and who not only condoned the crime, but rewarded it by giving the succession to the son of the adulterous intercourse with Bathsheba, has become the God of holy love and purity of the New Testament. At which of these stages entered that philosophical intuition of God which is said to be an innate faculty of the human mind, and the surest base of all our knowledge of the universe? Where is the inevitable intuitive perception of a personal Deity in the minds of some of the deepest thinkers and purest lovers of the present day, who, like Herbert Spencer, can discern nothing behind the veil but a great unspeakable and unknowable?

After all, we must fall back on Christianity for any grounds upon which to trust, more or less faintly, in the "larger hope." The Christian religion, apart from any question of miracles, is an existing fact. It is a fact which for nineteen centuries has proved, on the whole, in accordance with other facts and with the deepest feelings and highest aspirations of the noblest men and women of the foremost races in the progressive march of civilisation. Why do we say that its moral teachings, such as we find in the Sermon on the Mount, and in St. Paul's definition of Christian charity, carry conviction with them and prove themselves? Because they accord with, and give the best expression to, feelings which, in the course of evolution of the human mind from barbarism to civilisation, have become instinctive. We may be able to trace their origin and development, we may be able to see that they are not primary instincts, implanted at birth like those of the lower animals, but secondary instincts, formed by the action of a civilised environment on hereditary aptitudes. Still, there they are, and being what they are, and living in the age and society in which we actually live, they are inevitable and necessary instincts and it requires no train of reasoning or laboured reflection to make us feel that "right is right," and that it is better for ourselves and others to act on such precepts as those of "loving our neighbours as ourselves," and "doing as we would be done by," rather than to reverse these rules and obey the selfish promptings of animal nature. Of the same order, though less clear and cogent, are the teachings of

the Gospel respecting God and immortality. They are less clear and less cogent, because the only evidence by which they could be demonstrated from without, that of miracles, has broken down and failed us; and because we cannot verify them experimentally by an appeal to facts, as we can in regard to the working of moral laws and precepts. But it still remains that they are ideas which have arisen inevitably in the course of the evolution of the human mind; and that they fit in with and satisfy, in a way which no other ideas can do, many of the best and deepest feelings which have equally been developed in that mind, in the course of its progressive ascent from lower to higher things. It remains also true that science, while it can add nothing to this proof, takes nothing from it, and that while it excludes miracles and supernatural interference after the order of the universe has been once established, it leads us back step by step to a great Unknown, in which, from the very fact that it is unknown, everything is possible.

Further than this it is not possible to carry the proof. If we are to believe at all in a God, we must be content to believe that He knows better than we do what is right and consistent with the conditions of our own existence and that of the universe; and that part of the scheme is that at a certain stage of the development of our race we should have to exchange the certainty of simple and limited faith for the fainter trust in a larger hope. We may, perhaps, dimly discern something analogous in the progress of each individual from childhood to manhood. He has to part with many a simple belief and unhesitating trust, and climb the hill of life staggering under many a burden of doubt and difficulty; and yet it is better for him to "set a stiff heart to a steep brae," and struggle upwards while life is in him rather than to remain an innocent child playing at its foot.

Anyhow, whether we like it or not, this is the fact we have to accept; but the hill is steep, the burden heavy, and we may well be grateful to anything which, however vaguely, helps and cheers us on the way. From this point of view, the ideas of God and of a future life taught by the Christian religion, accepted by so many good men, and hallowed by so many venerable traditions

and sacred associations, should be cherished, as far as it is possible to do so without shutting our eyes to facts and indulging in conscious insincerity.

For the same reason we shall do well to bender with the forms and creeds of religion, even when they appear to be getting obsolete, and their strict and literal interpretation becomes no longer consistent with known truths. It is far better that the transformation requisite to bring them into accordance with the evolution of modern thought caused by the discoveries of science, should take place gradually and spontaneously from within, rather than forcibly and abruptly from without. Evolutionists specially ought to trust to the healing influences of time, and the inevitable though gradual survival of that which is most in harmony with its existing environment.

Already a great deal has been quietly done in this direction. Intolerance and fanaticism have almost disappeared from cultured minds. Even in the ranks of the clergy themselves, many, in all denominations, are devoting themselves more and more to good works, and less to theological disputes and sectarian wranglings.

The metaphysical side of Christian dogma is fast receding into the far distance. The Athanasian Creed, which once convulsed empires and occupied a foremost place in the thought of the age, has become a mere form, read once or twice a year by lukewarm preachers to indifferent or scandalised audiences, who would be only too glad to have a decent excuse for dropping it out of sight altogether. Let any sincere Christian put to himself candidly the question what part the "Holy Ghost," or the definition of the "Logos," really has in the living faith which guides his actions, and he will be astonished to find into what infinitesimal proportions these once vital dogmas have actually faded. It will be the same with all dogmas which, in their literal and historical interpretation, contradict established facts. They will be either forgotten, or, if they contain a kernel of spiritual meaning, will be transformed into truths taught by parables.

In the meantime, it behoves those who see more clearly than others the absolute certainty of the conclusions of science, and the inevitably fatal results to

religion of staking its existence on literal interpretations which have become flatly incredible, to do their best to assist the transformation of the old dogmatic theology into a new "Christianity without miracles," which shall retain the essential spirit, the pure morality, the consoling beliefs, and, as far as possible, the venerable forms and sacred associations of the old faith, while placing them in thorough accordance with freedom of thought, and with the whole body of other truths, discovered and to be discovered, respecting the universe and man.

CHAPTER X

PRACTICAL LIFE

Conscience—Right is Right—Self-reverence
—Courage—Respectability—Influence of
Press—Respect for Women—Self-respect of
Nations—Democracy and Imperialism—
Self-knowledge—Conceit—Luck—Speculation—
Money-making—Practical Aims of
Life—Self-control—Conflict of Reason and
Instinct—Temper—Manners—Good Habits
in Youth—Success in Practical Life—Edu-
cation—Stoicism—Conclusion.

Self-reverence, self-knowledge, self-control,
These three alone lead life to sovereign power.
Yet not for power; that of itself
Would come uncalled for; but to live by rule,
Acting the rule we live by without fear,
And because right is right to follow right,
Were wisdom in the scorn of consequence.

TENNYSON, *Enone*.

In these lines, which he puts into the mouth of the goddess of wisdom, Tennyson, the same poet who has already condensed the essence of modern thought in the lines already quoted from "In Memoriam," gives us what may be well called "the Gospel of practical life." It is clearly our highest wisdom to follow right, not from selfish calculation or hope of reward, but because "right is right"; in other words, because we have a standard within us which tells us, in an unmistakable voice, what to do and what to refrain from doing. For practical purposes, it is comparatively unimportant how this standard got there; whether, according to old creeds, by direct inspira-

tion or, as modern science tells us, by the slow evolution of primitive faculties and the accumulation through countless generations of hereditary influences tending towards the survival of the fittest, both of individuals and of societies, in the struggle for life. In either case the standard is there, not as a vague and theoretical, but as an absolute and imperative, rule, and the difficulty is not to discern it, but to act up to it.

It may be that it is to a great extent the product of education, and depends on the environment in which we are brought up. It is pretty certain that if I had been kidnapped when a child by Comanche Indians, I should have grown up with a very different moral standard touching the taking of scalps and the practice of treacherous murder. But I have not been so kidnapped, and having been born and brought up in a civilised country of the nineteenth century, it is inevitable that outward influences combined with inward capacities should give me a conscience, which tells me in clear enough accents whether I am doing right or wrong. And it is equally certain that by acting in accordance with this conscience, I shall, on the whole, be doing better for myself and better for others than by disregarding it. It is none too easy to make our life even a tolerable approximation towards doing right for the sake of right, and it would be folly to allow any theoretical considerations as to the origin of the idea of right to be an excuse for relaxing any of the constant and strenuous effort which is requisite to keep our feet from straying from the straight path. It is much wiser to cast around us for influences and inducements to strengthen the inward law, and to endeavour by clear insight to bring reason to the aid of faith, and enable us to see intelligently the main causes both of our weakness and of our strength.

This is what the poet does for us in the lines above quoted. Rightly considered, "self-reverence, self-knowledge, and self-control" are the three pillars which support the edifice of a wise and well-ordered practical life.

Self-reverence, in its widest meaning, includes the faculty of forming some ideal standard superior to the lower nature of animal man, and recognising in ourselves some power of approximating to it. The higher the standard the

nobler will be the man who cherishes it and tries to attain to it, but it is by no means a rare gift confined to a few select natures. On the contrary, it is the commonest and most universal incentive to good conduct. Even in the rudest and simplest form of admiration for physical courage, it makes heroes of many a common soldier and sailor. If poor Tommy Atkins, fresh from the plough-tail, stands firm in the shattered squares of Waterloo, or on the bloody ridge of Inkermann, it is because he has been brought up in the fixed idea that a Briton must not run away from a Frenchman or a Russian.

In civil life the idea of respectability, though not a very elevated one and apt to degenerate into narrowness, and that which Carlyle and Arnold sneer at as "Gigmanity" and "Philistinism," is yet one of universal and, on the whole, beneficial influence. A large majority of the middle and upper working classes lead decorous lives very much because they feel it incumbent on them to be "respectable" in their own eyes and those of their neighbours. In the case of one half of the human race, the female half, the feeling of self-respect and the desire to be what is called respectable afford the strongest and most constantly present securities both for good morals and good manners. The immense majority of British women are modest maidens and faithful wives, not so much from any cold calculation of the balance of advantages, or from fear of consequences, as from an instinctive feeling that they cannot be otherwise without losing caste and forfeiting their own self-respect and that of their neighbours.

From these common and universal forms of "self-reverence" we rise, step by step, to the higher ideals, which, in every rank and every condition of life, give us among gifted natures what may be called the "salt of the earth," and the shining examples which guide the world to higher things—noble men and noble women. A Sidney, dying on the field of Zutphen, hands over the cup of water to a wounded soldier because his soul, nourished on noble thoughts, and his fancy, fed by the old ballads which, like that of "Chevy Chase," stirred him like a trumpet-blast, had led him to conceive an ideal of a perfect knight which would have been tarnished by any shade of a

selfish action. Gordon sacrifices his life at Khartoum, not only cheerfully but almost instinctively, because the suggestion that he might save himself by abandoning those who had trusted in him seems an absolute impossibility.

It is a great advantage of the present day that education and the press bring such instances of devoted heroism vividly before millions who would never otherwise have heard of them. The influence of the press, both in the way of books and newspapers, is happily in this country almost entirely one which makes for good. There is not a noble act done throughout the world, by high or low, by private or officer, by soldier or civilian, which is not held up for praise and admiration; while any signal instance of cowardice or selfishness is held up to contempt. Newspaper correspondence and leading articles have, to a great extent, superseded sermons, and do the practical moral work of the world in asserting the right and rebuking wickedness in high places. In like manner all the higher works of poetry, fiction, and biography have a good tendency, and are read by an ever-increasing number of readers. Enid and Elaine, Jeanie Deans, Laura Pendenis, Lucy Roberts, are the sort of models set before girls; while boys who have any heroic fibre in their nature are fed with such lives as those of Lawrence and Gordon. For all, but especially for the young, there is no help to self-improvement so great as to read good books in a generous spirit; and nothing which dwarfs the mind so much as to debase it by frivolous reading, and by the moral dram-drinking of sensational rubbish, until it loses all natural and healthy appetite for the pure and elevated. An affectation of narrow knowl- ingness is also a very fatal tendency in the youthful mind. A man from whose mouth such words as "rot" and "hum- bug" are constantly heard is, in nine cases out of ten, a very poor, rotten creature himself.

Among the many advantages of self-respect, not the least important is that it teaches respect for others. The petty jealousies and suspicions, the senseless quarrels, the slanderings and backbitings, which so often turn sour the wine of life, disappear of themselves when a proper standard of self-respect has been firmly established, and a high ideal of human

Life has become part of our nature. As Tennyson says :

Like simple noble natures credulous
Of what they wish for, good in friend or
foe ;

while on the other hand

The long-necked geese of the world
Are always hissing dispraise, because their
natures are little.

There are some who delight in running down everything and everybody, and whose appetite for scandal is so great that they are positively unable to refrain from believing and spreading an ill-natured tale, if it affects some eminent man, and still more if it affects a well-known woman. Such are assuredly not the sort of persons whom we should like to resemble ourselves, or to see our sons and daughters resemble. I have always found through life, a safe rule to go by was, if you hear an ill-natured story of a man, discount nine-tenths of it as a lie, and if of a woman, don't believe a word of it.

Perhaps the best test of the amount of real "self-reverence" in an individual or a nation, is to be found in the tone and manner in which women are treated. A low tone invariably bespeaks a low nature, and testifies to innate coarseness and snobishness, however high may be the rank and polished the outward varnish of the person who indulges in it. On the other hand the roughest miner or back woodsman is already more than half a gentleman, if his attitude towards women is one of chivalrous courtesy. Nothing looks more hopeful for the future of the human race than to see that the female half of it are constant gainers by the progress of freedom and education. It goes a long way to reconcile one to the dangers of democracy, to find that in the newest and most democratic countries of the world, such as the United States and British colonies, women can travel alone without fear of insult, and have far more innocent liberty and freedom of thought and action than they have in older societies. Whatever may be the case as regards men, for women there can be no doubt that there is a progressive scale upwards from East to West, from despotism to freedom, from Turkey to America.

What has been said of individuals is

even more true of nations. Self-respect is the very essence of national life. A great nation may suffer great disasters, and survive them, if the spirit of its people remains intact. England survived the war of American independence, and Prussia recovered from the defeat of Jena. But if a nation loses its vigour and self-respect, if it begins to groan under the burdens of extended empire, and to prefer comfort to honour, ignoble ease to noble effort, the hour of its decline has sounded. Imperial Rome did not long survive when she began to contract her frontiers and buy off barbarians. The most fatal thing any Government can do for a country is to destroy its sense of self-respect and teach it to acquiesce in what is felt to be dishonourable.

Looking forward to the future of the great British Empire, this is evidently a turning-point of its destinies. The triumph of democracy is an inevitable fact ; for knowledge is power, and whether for good or evil, the masses have either acquired, or are fast acquiring knowledge, and with equal political rights numbers will tell. How will this democracy of the future affect Imperial interests, and what will be its attitude in regard to foreign and colonial policy ?

On the one hand it may be hoped that by making our institutions more popular, and going down to the heart of the masses, our policy will acquire fresh energy and our public men fresh vigour. The working classes are very patriotic, and, on the whole, more open to the influence of generous ideas than the class immediately above them. In the recent instance of the great civil war in the United States, we have seen a democracy making greater sacrifices of men and money for the idea of maintaining national greatness, than was probably ever voluntarily made by any monarchical or aristocratic country. The Copper-heads, who preached peace where there was no peace, and advised letting the erring sisters go their way rather than spend lives and money in the attempt to coerce them, found no response from a nation who felt that the union was their union, and its greatness the separate personal possession of each individual citizen.

But, on the other hand, demagogues will never be wanting to flatter the people, and angle for power by appealing to their lower instincts and advo-

cating measures of present ease and popularity. If a necessity arises for maintaining by the sword an empire which has been won by the sword, the army of parochial politicians who gauge everything by the standard of pounds, shillings, and pence, will be reinforced by the far more respectable body of sentimentalists and humanitarians, who shrink from the shedding of blood in wars the abstract justice of which is not absolutely demonstrated. A large number, perhaps a majority, of platform orators will therefore be found now, as it was in the days of Demosthenes, to denounce armaments, ridicule precautions, minimise responsibilities, and look upon India, the Colonies, and extended empire generally, as troublesome encumbrances rather than as glorious possessions. The two conflicting ideals constantly set before our future political rulers, the four millions whose votes decide the fate of policies and of ministries, will be, on the one hand, that our first duty is to hand down the British Empire to our sons no less great and glorious than we received it from our fathers; on the other, that it is better to stay at home, mind our own affairs, avoid entanglements, contract responsibilities, pass reform bills, and reduce taxes, trusting to the "silver streak" and the chapter of accidents to protect us from invasion. It is the old story of the fable of Hercules, which presents itself constantly to each individual and to every nation. Shall we follow the strait and narrow path which leads upwards, or the broad and easy one which leads, with a pleasant slope, to a lower level? Would it have been better for Paris to give the golden apple to Minerva, counselling "self-reverence, self-knowledge, self-control," or to Venus, promising pleasure?

SELF-KNOWLEDGE

Oh wad some Power the giftie gie us
To see oursels as ithers see us!

BURNS.

A gift which is unfortunately as rare as it is necessary. Without self-knowledge to see our faults how shall we correct them? How shall we become wise if insensible to our follies? How shall we achieve success if we learn no lessons from our failures? There are some men

so blinded by vanity that they go through life committing ungentlemanly actions while fancying themselves perfect gentlemen; who are convinced that all men admire them and all women are in love with them, while in reality every one sees through them and laughs at them. A thoroughly impervious vanity is like a waterproof, which throws off the wholesome rain on the outside, while on the inside it is soaked with unhealthy exhalations.

Fortunately this type of vanity is not a common one with our English race, who are too proud and self-reliant to feel the petty anxiety of the really vain man to be always shining in the eyes of others. With us it takes more the form of priding ourselves on artificial distinctions, and attaching an exaggerated importance to matters of trivial importance. Your commonplace English swell, for instance, is apt to class all mankind under two categories—those who associate with lords and wear clothes of a fashionable cut, and those who do not, and to set down all the former as the "right sort," and all the latter as "brutes."

It is a sign of narrowness to make a fetish of these or any other arbitrary distinctions between an upper ten and the rest of mankind, and self-knowledge is never more required than to show the hollowness of adventitious advantages which are not supported by intrinsic merit. A true gentleman feels

The rank is but the guinea stamp,
The man's the gowd for a' that,

and feeling this, he holds out the hand of hearty human sympathy to peasant as well as to peer. If born to rank and riches, self-knowledge tells him that he is simply placed on a pedestal, where, if he fails to act on the maxim that "noblesse oblige," the failure will be the more conspicuous. No man who really knows himself can ever be conceited, for he must be aware how far he has fallen short in practice of his own ideal standard, and how constantly "he has done things he ought not to have done, and left undone things he ought to have done."

On the other hand, there is an opposite extreme from which self-knowledge will save a man: that of undue despondency and want of proper confidence and self-reliance. There are men who fail in

everything they undertake because they have not the heart to undertake it resolutely, and who at last sink down into the hopeless condition of querulous mental invalids, who cherish their ailments rather than combat them, and are rather proud than otherwise to be considered as interesting victims of untoward circumstances.

For all the relations of practical life the one essential requisite of success is to see things as they really are, and not as we wish them to be; and for this purpose self-knowledge is the foundation of clear insight. If the focus of the glass is wrongly adjusted it will show only distorted images, but if a clear eye looks through a properly focussed glass, outward objects will be truly represented.

Perhaps the commonest of all delusions is that of being born under a lucky star. A man gambles, bets, or speculates because he thinks he is lucky and sure to win. Now, there is in reality no such thing as luck, it is all a question of averages. The only approach to what may be called luck is, that a fool will probably have more of it than a wise man, for as the fool foresees nothing, whenever fortune's die turns up in his favour he sets it down to luck, while the wise man, who has schemed and worked for the event, calls it foresight. But the actual average of events, which depend entirely on chance, will be the same.

If a man plays at *rouge et noir* with one chance in a hundred in favour of the bank, it is certain that if he plays often enough, he will lose his capital once at least for every hundred times he plays. Or, if he speculates on the Stock Exchange, the turn of the market and broker's commission will, in the long run, certainly swallow up his original capital. And yet men will gamble and speculate, because they cannot resist the pleasing illusion that they are lucky, and that it would be very nice to win a large stake without having had to work for it.

There is nothing for which self-knowledge is more indispensable in practical life than to enable a man to steer a straight course between opposite extremes, and to discern clearly the boundary line between right and wrong. The law of polarity, by which things good in themselves if pushed to extremes become bad, and every truth develops a corre-

sponding error, is of daily and universal application in practical affairs.

Take, for instance, the much-debated question of the pursuit of money. Poets and novelists are never tired of denouncing the "Auri sacra fames," and there is no doubt that, when carried to excess, it is the fertile source of crime; and even in a less degree, it leads to meanness and dishonesty, and has a degrading influence on the individual or the nation who give themselves up too exclusively to the worship of the "almighty dollar." But, on the other hand, the desire, or rather the necessity under the conditions of civilised society, of making money, is by far the most powerful and all-pervading influence of practical life. And, within due bounds and under proper conditions, it is a healthy and beneficial influence. At the lowest stage it obliges men to work instead of being idle, and this is an immense advantage both to the community and to the individual. An idle man, in every grade of society, is generally a worthless and often a bad man; while an honest working man, whether the work be of the head or hand, is far more likely to be happy and respectable.

Again, the necessity of earning money is a wonderful test of the real value of a man in the world's market. We should be all very apt to become pretentious wind-bags of conceit, if we were not brought to our senses by the wholesome *douche* of having to work for a livelihood. Many a man who fancies himself intended for a poet or politician, and some who by accident of birth or fortune are pitchforked into prominent positions, would find it difficult to point out any occupation in which they are honestly worth a couple of hundred a year.

Even in the higher departments of art and literature, it may be questioned whether the healthy, natural desire to turn an honest penny has not inspired greater works than a morbid appetite for fame. Shakespeare's ambition was to retire to his native town with a moderate competency; Walter Scott's to become a laird, with a family estate, in the border-land of the chief of his clan—"the bold Buccleuch." And, in the present day, literature is becoming more and more an honourable profession, which men take to, as they do to law

or medicine, as a means of earning a livelihood.

It must always be borne in mind that under the practical conditions of modern civilisation, money means not only the possibility of bare existence, but nearly all that makes existence tolerable—health, recreation, culture, and independence. The number and locality of the rooms a man lives in, the number of cubic feet and purity of the air he and his family breathe, are questions of rent; the food they eat, the clothes they wear, the books they read, the holidays they enjoy, are all questions of money. And above all, without money there is no independence. An absolutely penniless man has to fall back on crime or the workhouse; a poor man is at the mercy of a thousand accidents; sickness, fluctuations of trade, caprice of employers, pressure of creditors, may at any moment reduce him and those who depend on him to want. It admits of no question, that the first duty of every one is to endeavour to raise himself above this level of ignoble daily cares, and plant himself in a position where he can face the present and look forward to the future with tolerable equanimity. As we rise in the scale of society the problem becomes more difficult. Money-making is very apt to be pushed to excess and lead to gambling and dishonesty; while the worship of wealth, which is perhaps the besetting sin of the age, is distinctly the cause of much lax morality and snobbish vulgarity. But on the other hand, money is power, and a large fortune honestly acquired and well spent, gives its possessor unrivalled opportunities for doing good. He can assist charities, patronise art, and if gifted with force of character and fair abilities may become a legislator and statesman, and enrol his name in the annals of his country. It is hard to say that if a man has an opportunity of making a large fortune honestly, and feels that he has it in him to use it nobly, he should refrain from doing so because moralists cry "Sour grapes," and tell him that riches are deceitful.

But for nothing is "self-knowledge" more requisite than to enable a man to see clearly how high he can safely aim, and what sort of stake he can prudently play for. The immense majority of man-

kind have neither the opportunities nor the faculties for playing for very high stakes, and must be contented with the safe game for moderate and attainable ends. One such end is within the reach of almost every one:

To make a happy household clime
For weans and wife,
Is the true pathos and sublime
Of human life.

So says Burns, who has a rare faculty of hitting the right nail on the head; and the ideal he sets before us in these simple lines is at once the truest and the most universal. The man who fails in this is himself a failure; while the man who by his industry and energy supports a family in comfort and respectability according to their station, and who, at the same time, by control of temper, kindness, unselfishness, and sweet reasonableness makes his household a happy one, may feel, even though fortune may not have placed him in a position of higher responsibilities, that he has not lived in vain, that he has performed the first duties and tasted the truest pleasures of mortal existence, and that, whatever there may be behind the impenetrable veil, he can face it with head erect, as one of "Nature's gentlemen."

SELF-CONTROL

This is, after all, the vitally important element of a happy and successful life. The compass may point truly to the pole, the chart may show the right channel amidst shoals and rocks, but the ship will hardly arrive safely in port unless the helmsman stands at his post in all weathers, ready to meet any sheer of the bow by a timely turn to starboard or to port. So self-reverence and self-knowledge may point out ever so clearly the path of duty, unless self-control is constantly present we shall surely stray from it. At every moment of our lives natural instinct tells us to do one thing, while reason and conscience tell us to do another. It is by an effort that we get up in the morning and go about our daily work. It is by an effort that we refrain from indulgences and forego pleasures, control our passions, restrain our tempers. The uncultured man is

violent, selfish, childish; it is only by the inherited or acquired practice of self-control that he is transformed into the civilised man—courteous, considerate, sensible, and reliable.

The necessity of self-control in all the more important relations of moral and practical life is so obvious that it would be only repeating commonplaces to enlarge on it. But there is often danger of its being overlooked in those minor morals of conduct which make up the greater part of life, and determine the happiness or misery of oneself and others.

For instance, control over the temper. A man never shows his cousinship to the ape so much as when he is in a passion. The manifestations are so exactly similar—irrational violence, nervous agitation, total loss of head, and abdication of all presence of mind and reasoning power. To see a grown-up man reduced to the level of a spoiled child, or of a monkey who has been disappointed of a nut, is a spectacle of which it is hard to say whether it is more ridiculous or painful. Even worse than occasional violence is the habitual ill-temper which makes life miserable to those who are obliged to put up with it. We call a man who strikes a woman or child with his fist a brute; what is he if he strikes them daily and hourly, ten times more cruelly, with his tongue? A ten times greater brute. And yet there are men, calling themselves gentlemen, who do this, either from sheer brutality of nature, or oftener from inconsiderateness, coarseness of fibre, and inability to exercise self-control in minor matters.

There is one very common mistake made, that of considering relationship an excuse for rudeness. The members of a family may relax something of the stiffness of company manners among themselves, but they should never forget that it is just as much ill-breeding to say a rude thing to a wife, a sister, or a brother, as it would be to say it to any other lady or gentleman. In fact, it is worse, for the other lady can treat you with contempt and keep out of your way, while the poor woman who is tied to you feels it keenly, and has no means of escape from it. Good manners are, in practical life, a great part of good morals; and there is something to be

said for religions which, like the Chinese, lay down rules of politeness, and make salvation depend very much on the observance of rites and ceremonies intended to ensure courtesy and decorum in the intercourse of all classes of the community in daily life.

Although not so bad as the indulgence of a violent or morose temper, a great deal of unhappiness is caused by a fussy and fidgety disposition, which makes mountains out of molehills, and keeps every one in hot water about trifles. This is one of the common faults of idleness, as genuine work both strengthens the fibre to resist and leaves no time to brood over petty troubles.

The excuse one commonly hears from those who give way to these petty infirmities is, "that they cannot help it, they are born with thin skins and excitable tempers." This is the excuse of sloth and weakness. If, as the poet says,

Man is man, and master of his fate,

what sort of an unmanly creature must he be who cannot master even the slightest impulse or resist the slightest temptation, and allows himself to be ruffled into a storm by every passing breath, like a shallow roadside puddle? If he will not try he certainly will not learn; but if he will honestly try to correct faults, he will find it easier every time, until the fancied impossibilities fade away and are forgotten. A man who is so much afraid of tumbling off that he will never mount a horse, may fancy that Nature has disqualified him for riding; but for all that, nine men out of ten, if obliged to try—say as recruits in a cavalry regiment—though they may not all turn out accomplished horsemen, will all learn to ride well enough for practical purposes.

It is peculiarly important for the young to set resolutely about correcting bad habits and forming good ones, while the faculties are fresh and the brain supple; for, in obedience to the law by which molecular motions travel by preference along beaten paths, every year cuts deeper the channels of thought and feeling, whether for good or evil. A brain trained to respond to calls of duty soon does so with ease and elasticity, just as

the muscles of the blacksmith's arm or of the ballet-dancer's leg acquire strength and vigour by exercise; while, on the other hand, motion is a pain and self-control an effort to the soft and flabby limb or brain which has been weakened by self-indulgence.

It is scarcely necessary to say that for success in practical life, self-control is the one thing most needful. To take the simplest case, that of a young working man beginning life with health, knowledge of a trade, or even without it with good thews and sinews, he is the most free and independent of mortals, on one condition—that he has saved £10. With this, he is a free agent in disposing of his labour, he can make his contract with an employer on equal terms, he can carry his goods to the best market, and is practically a citizen of the world, ready to start for San Francisco or Melbourne if he thinks he can better himself. Without it, he is a serf tied to the soil, he cannot move from place to place, he must take whatever wages are offered him or starve.

But how to save the £10? That is a question of daily and weekly recurrence; whether to spend an extra shilling in the pleasant way of going to a public-house and sitting with a pipe and a jug of ale by the fireside among jolly companions, or to forego the pleasure and save the shilling. A shilling a week saved will, in four years, give him the £10, and go a good way to establish habits which, if he is enterprising and goes to a colony, or is clever and has any luck at home, may readily make the ten a hundred, or even a thousand pounds. So in every class of life, the man who gets on is the man who has schooled himself never to ask whether a thing is pleasant, but whether it is right and reasonable; who always keeps a bright look-out ahead, and who does his best at the task, whatever it may be, that is set before him.

Education really resolves itself very much into teaching the young to acquire this indispensable faculty of self-control. The amount of positive knowledge, useful in after life, acquired at our English public schools, is really very little beyond the three R's. A boy who could teach himself French or German in five months spends five years over Latin and Greek, and in nine cases out of ten forgets them

as soon as he leaves school or college. Almost everything we know that is worth knowing we teach ourselves in after life. But the discipline of school is invaluable in teaching the lesson of self-control. Almost every hour of the day a boy at school has to do things that are disagreeable and abstain from doing things that nature prompts, under pain of getting a caning from the master or a thrashing from other boys. The memory also is exercised, and the faculty of fixing the mind on work is developed, by useless almost as well as by useful studies. In this point of view even that *ne plus ultra* of technical pedantry, the Latin grammar, with its "Propria quæ maribus" and "As in presenti," may have its use in teaching a boy that no matter how absurd or repulsive a task may be, he has got to tackle to it or worse will befall him.

But it is in a moral sense that the influence of a good school is most valuable. The average boy learns that he must not tell lies, he must not be a sneak or a coward, he must take punishment bravely, and conform to the school-master's standard of discipline and the school-boy's standard of honour. In this way the first lesson of life, stoicism, becomes with most English lads a sort of instinct or second nature.

For stoicism, after all, is the foundation and primary element of all useful and honourable life. Whether as Carlyle's "Everlasting No," or as George Eliot's advice to take the pains and mishaps of life without resorting to moral opium, the conclusion of all the greatest minds is that a man must have something of the Red Indian in him and be able to suffer silently, and burn his own smoke, if he is to be worth anything. And still more a woman, who has to bear with and make the best of a thousand petty annoyances without complaint. Men can bear on great occasions, but in the innumerable petty trials of life women as a rule show more self-control and moral fortitude. What would the life of a woman be who could not stand being bored with a smiling face, put up with the worries of children and servants with cheerful fortitude, and turn away an angry word by a soft answer?

There is much more that might be said, but my object is not to preach or

moralise, but simply to record a few of the practical rules and reflections which have impressed themselves on me in the course of a long and busy life. I do so in the hope that perchance they may awaken useful thoughts in some, especially of the younger readers, who may happen to glance over these pages. This much I may say for them, I have tried them and found them work well. I have lived for more than the Scriptural span of threescore and ten years, a life of varied fortunes and many experiences. I may say, in the words which my favourite poet, Tennyson, puts into the mouth of Ulysses :

For ever roaming with a hungry heart,
Much have I seen and known, cities of men,
And councils, climates, governments.

And the conclusion I come to is, not that of the Preacher, "Vanity of vanities, all is vanity," but rather that life, with all its drawbacks, is worth living ; and that to have been born in a civilised country in the nineteenth century is a boon for which a man can never be sufficiently thankful. Some may find it otherwise from no fault of their own ; more by their own fault ; but the majority of men and women may lead useful, honourable, and on the whole fairly happy lives, if they will act on the maxim which I have always endeavoured, however imperfectly, to follow—

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A Brief Statement of the Objects and Methods of the Association.

The "Spirit of Rationalism."

THE prevalence of the "spirit of Rationalism," as Mr. Lecky has called it, is one of the chief features distinguishing modern from mediæval thought and life. This spirit has permeated all nations and all classes comprised in the world of Western civilisation. It is not any definite and reasoned doctrine, but simply a sceptical attitude towards magic and miracles, assumptions of occult power and insight on the part of men, and alleged divine interferences.

We believe that this spirit of Rationalism is closely connected with the progress of modern science and critical research. The "spirit" assumes unconsciously and as a general, practical rule that uniformity of nature which science and research repeatedly prove to exist in particular cases. In other words, it assumes that exceptional occurrences are due to unfamiliar combinations of familiar conditions, and do not require superhuman conscious agency to account for them. But the spirit of Rationalism is, after all, only a mental tendency. As such, it is liable to exist in the modern mind side by side with the supernaturalism of a pre-scientific age. It does so conspicuously under present-day Protestantism. Most Protestants are Rationalists in their attitude towards contemporary instances of alleged miracle and inspiration. They are Rationalists in their attitude towards the sacred literatures of Buddhists, Brahmans, Parsees, and Mohammedans, and towards the distinctive teachings of the Church of Rome. As regards the narrative and theology contained in the Bible, however, they are not Rationalists, but at best compromisers between traditional reverence and scientific inquiry. Thus, while the spirit of Rationalism is rife, the attempt to raise Rationalism into a consistent rule of the intellectual life is extremely unpopular, having to face both active opposition and widespread indifference. That, nevertheless, is the aim of the Rationalist Press Association, Limited.

Embodiment of the Rationalistic Spirit.

The physical sciences are, within their respective limits, the most consistent embodiments of the spirit of Rationalism. Astronomy, geology, and biology have successively broken away from Biblical tradition. They have become genuine sciences through an exercise of the freest and most serious inquiry, combined with the expectation of discovering natural uniformities where men formerly saw nothing but supernatural mysteries. But the special sciences belong primarily to specialists. What the average thinking man requires is a good synopsis of the object-matter and results of science, an insight into its nature and methods, and a habit of mind which will enable him to form sensible and serviceable judgments as to the many questions which cannot yet (and perhaps never can) be decided with scientific accuracy.

Thus the spirit of Rationalism has needed to embody itself, not only in science and exact research, but in certain types of human thought which form, as it were, the atmosphere of science. Among the more highly-cultivated intellects it has given rise to the various schools of modern philosophy. Among the people and certain of their democratic leaders it has given rise to the various parties of modern Freethought. Philosophy is, on the whole, somewhat conservative, although it is far more anxious to conserve the wide outlook of Plato and Aristotle than the theology of Paul and Augustine. The tendency of popular Freethought is more revolutionary and impatient for a new start in human ideas. With the spread of education and democracy, however, these two types of advanced thought must increasingly coalesce. In coalescing, Freethought should gain breadth of view and lose the "scoffing" habit which only hardens foes and alienates many who would otherwise be friends. Philosophy, on the other hand, should gain a certain downrightness and relation to practical life which it generally lacks, and at the same time learn to relinquish such speculations as are not even possessed of probability in the light of experience and science. To temper Freethought with philosophy, and to assist in freeing philosophy from all academic trammels and fanciful excrescences, are among the objects for which the R. P. A. has been formed.

The Limits of Compromise.

The semi-philosophic works which have acquired wide popularity in recent years are those which have set forth some new compromise (or what has really amounted to a compromise) between certain tenets of Christianity and certain views of modern science. We believe that this accommodating spirit, though a long way in advance of the spirit of sheer intolerance, lags equally far behind the philosophic spirit of truth seeking.

Compromise is inevitable, and, to a certain extent, salutary, in politics. This is because political measures have to be adjusted to the existing views of the most influential body of citizens, no matter whether those views be sound or the reverse. But the very fact which makes compromise legitimate in politics makes it illegitimate as regards religious and abstract social questions. Thus a consistent Rationalism is the direct antithesis, the uncompromising rejection, of that religious faith which deems it necessary to accept traditional and reputedly sacred opinions, without seriously inquiring into their evidential value. In saying this, we do not, of course, mean that all traditional religious opinions are necessarily to be rejected, nor do we pretend to be in a position to teach the whole philosophy of Rationalism. That is still in the making, and it is that which the R. P. A. must help, directly or indirectly, to make. Our contention is that the appeal to experience and reason must alone decide what elements of traditional Christianity are worthy to be retained, and that theological dogmas and scriptural prejudices must be

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allowed no more influence over the philosophic thinker than has the legend of creation contained in the book of Genesis over the present-day astronomer or geologist.

After careful consideration, aided by the advice of several well-known thinkers, the following definition of Rationalism has been adopted and embodied in the Memorandum of Association :—

“Rationalism may be defined as the mental attitude which unreservedly accepts the supremacy of reason and aims at establishing a system of philosophy and ethics verifiable by experience and independent of all arbitrary assumptions or authority.”

In making direct mention of ethics we wish to accentuate the fact that the philosophy of Rationalism cannot fail to have important bearings on human conduct, which will, we believe, be far more beneficent in the long run than those of traditional theology.

The Need of Propaganda.

Although the spirit of Rationalism has permeated the Protestant clergy, conforming and non-conformist alike, and, in many cases, the preachers are more liberal-minded than their flocks, professional needs naturally make them, as a body, hostile to Rationalism in any consistent shape. They and their lay supporters spare neither pains nor money in promulgating views which, though differing widely according to the church or sect from which they proceed, agree in attributing unique authority and surpassing excellence to the Christian religion, and defending, rather than dispassionately inquiring into, its supposed essentials. Many powerful associations, among which the Religious Tract Society and the Society for Promoting Christian Knowledge are perhaps the most widely known, are carried on largely with the object of vindicating Christian tradition against Rationalist criticism.

Philosophic Rationalists, on the other hand, have been disposed to trust to the progress of science and the ultimate triumph of truth, and have made comparatively little effort to propagate their opinions. It is believed that the R. P. A. will be a means of arousing and directing the energies of such torpid sympathisers. Concerted action among Rationalists was never more needed than now, in face of the present widespread reaction towards relatively irrational beliefs and practices. This reaction shows itself in the disposition to assert the sufficiency of instinct and sentiment, as well as to magnify the claims of custom, ritual, and authority, while making light of reason, evading the duty of critical inquiry, and ignoring the need of a broad human and scientific outlook, such as constructive philosophic thought alone can give.

The cause of Rationalism cannot be assisted more materially than by promoting the publication and distribution of works which the organised weight of religious prejudice, the stolid indifference of the general public to philosophic inquiry, and the consequent policy of the popular press and the booksellers, all tend to discourage, if not to taboo—provided, of course, that such works have intrinsic value.

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